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REPORT
OF THE
ADJUTANT-GENERAL,
State of Connecticut,
TO THE
COMMANDER-IN-CHIEF,

NOVEMBER 30, 1892.

PRINTED BY ORDER OF THE LEGISLATURE.

HARTFORD, CONN.:
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1892.

REPORT.

HARTFORD, November 30, 1892.

To His Excellency, MORGAN G. BULKELEY,

Commander in-Chief.

SIR,—I have the honor, for the third time, to render an account of the affairs of the Brigade of Connecticut National Guard, and other armed bodies authorized by the Militia law of the Commonwealth, the work performed during the last twelve months, and the condition of the force at this date.

Since the last report was made the department has met a serious loss in the demise of Colonel George M. White, who had been Assistant Adjutant-General since January, 1885.

His early training in the "Russell Military School," his service in the 1st and 15th Regiments of Connecticut Volunteers, 1861-5, and his experience in the affairs and duties of this office had made him an exceptionally valuable official. I desire to place on record acknowledgment of the personal loss I sustained in the death of this intelligent, faithful, energetic, and valued friend and assistant.

The department was fortunate, however, in securing the services of a worthy successor to Col. White in Colonel William H. Tubbs, a veteran soldier, whose years of service in the Connecticut National Guard, after the war, and knowledge of its affairs and needs, together with his information relating to pension matters, specially fits him for the important office duties in charge of the Assistant Adjutant-General.

ORGANIZATION AND MEMBERSHIP.

No change has occurred in organization since the report of November 30, 1891. The following table exhibits the strength of the several commands as recorded in this office. A comparison with a similar table published one year ago shows a gain of 100 officers and enlisted men during the year. Eleven companies of infantry have the maximum strength allowed by law, three officers and sixty-five enlisted men. Thirty companies have a membership of 90 per cent., or better, of the maximum. The Machine-Gun

Platoons, Hospital and Signal Corps maintain full membership of excellent material and are in good condition, under capable officers.

The Governor's Guard organizations maintain about the same average of strength as last year, the First Company of Foot Guard having its full chartered strength, six officers and 112 enlisted men, with a considerable number of supernumeraries waiting to fill vacancies.

Brigade of C. N. G.	Organizations.	Officers.	Enlisted Men.	Total.
Brigade Headquarters,	Brigade Commander and Staff,	10	3	13
First Regiment Infantry,	Field, Staff, N. C. S., & Band,	10	25	35
	10 Companies,	29	634	663
	1 Hospital Corps, . . . . .	..	5	5
	1 Signal Corps,	1	9	10
	1 Machine-Gun Platoon, . .	1	8	9
Second Regiment Infantry	Field, Staff, N. C. S., & Band,	10	25	35
	10 Companies,	27	638	665
	1 Hospital Corps, . . . . .	..	4	4
	1 Signal Corps,	1	8	9
	1 Machine-Gun Platoon, . .	1	8	9
Third Regiment Infantry,	Field, Staff, N. C. S., & Band,	10	25	35
	8 Companies,	22	459	481
	1 Hospital Corps, . . . . .	..	4	4
	1 Signal Corps,	1	9	10
	1 Machine-Gun Platoon, . .	1	7	8
Fourth Regiment Infantry,	Field, Staff, N. C. S., & Band,	10	25	35
	8 Companies,	23	496	519
	1 Hospital Corps, . . . . .	..	5	5
	1 Signal Corps,	1	9	10
	1 Machine-Gun Platoon, . .	1	8	9
Infantry,	2 Separate Companies, . . .	6	116	122
Battery "A," Lt. Artillery,	2 Platoons,	5	76	81
Brigade,	52 Organizations,	170	2,606	2,776
Governor's Guard.				
First Foot, Hartford, . .	1 Company,	6	112	118
Second Foot, New Haven,	1 Company,	3	45	48
First Horse, Hartford, . .	1 Troop,	5	71	76
Second Horse, New Haven	1 Troop,	8	86	94
Total,	56 Organizations,	192	2,920	3,112

SPRING PARADES, 1892.

Commandants of Regiments report the following result of the "Spring Field Day."

FIRST REGIMENT, COLONEL CHARLES L. BURDETT, 13 ORGANIZATIONS.

Companies.	A	B	C	D	E	F	G	H	I	K	H. C.	S. C.	M.-G P.	Total.
Present.....	65	62	66	54	60	45	67	60	57	66	3	9	8	622
Absent	2	5	2	12	6	9	1	7	9	2	2	0	0	57
Present and Absent....	67	67	68	66	66	54	68	67	66	68	5	9	8	679

Per cent. present, 91.61.

ADJUTANT-GENERAL'S REPORT.

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SECOND REGIMENT, COLONEL JOHN B. DOHERTY, 13 ORGANIZATIONS.

Companies.	A	B	C	D	E	F	G	H	I	K	H. C.	S. C.	M.-G. P.	Total.
Present.....	67	63	64	68	65	68	65	58	64	63	3	10	9	667
Absent.....	1	5	4	0	1	0	2	10	3	4	2	0	0	32
Present and Absent....	68	68	68	68	66	68	67	68	67	67	5	10	9	699

Per cent. present, 95.42.

THIRD REGIMENT, COLONEL AUGUSTUS C. TYLER, 11 ORGANIZATIONS.

Companies.	A	B	C	D	E	F	G	I	H. C.	S. C.	M.-G. P.	Total.
Present.....	49	55	64	54	50	46	62	58	7	10	9	464
Absent.....	7	11	3	3	8	11	1	8	0	0	0	52
Present and Absent.....	56	66	67	57	58	57	63	66	7	10	9	516

Per cent. present, 89.92.

FOURTH REGIMENT, COLONEL RUSSELL FROST, 11 ORGANIZATIONS.

Companies.	B	C	D	E	F	G	I	K	H. C.	S. C.	M.-G. P.	Total.
Present.....	54	61	58	64	55	53	53	49	6	9	9	471
Absent.....	10	7	8	3	12	10	7	0	0	1	0	58
Present and Absent.....	64	68	66	67	67	63	60	49	6	10	9	529

Per cent. present, 89.04.

First Separate Company—Present, 51; absent, 16; total, 67.
Per cent. present, 76.12.

Second Separate Company—Present, 40; absent, 12; total, 52.
Per cent. present, 76.92.

Battery "A"—1st Platoon, present, 36; absent, 3. 2d Platoon, present, 39; absent, 1. Total: present, 75; absent, 4. Present and absent, 79. Per cent. present, 94.94.

As has been the practice heretofore, a part of the day was devoted to instruction in drill, and the remainder spent at the rifle range, qualifying in marksmanship.

Field and staff officers in charge of the exercises very generally commend the work done by the various commands, reporting, as a rule, earnest effort on the part of officers and men to improve their military knowledge, conscientiously striving, by hard work, to make

the most of the opportunity for advancement afforded by the outdoor exercises, paid for by the State.

DRILL SEASON, NOVEMBER 1, 1891, TO JUNE 1, 1892.

General Orders No. 28, from this office, dated November 7, 1891, directed that the "New drill regulations for the Army and Militia of the United States" be taken up for study by all infantry officers and non-commissioned officers of the Brigade. This was followed, January 22, 1892, by orders to put them in practice in all infantry companies; "all maneuvers and exercises not embraced in this system" were prohibited. The three months' study had equipped commandants of companies fairly well to begin instruction, in fact they needed practice to complete their study. It is a pleasure to note that the new system was entered upon with ardor, intelligence, and most satisfactory results.

The scheme of inspection of drills by Field and Staff Officers, inaugurated by G. O. No. 22, October 10, 1890, was continued this season; the spirit of the order, however, I regret to say, was not so fully entered into as I had hoped it would be for the second season, or, as I trust, it may be during this season. I anticipate good results from the visits and teachings of the Officer of the Regular Army, on duty at General Headquarters. The drill attendance of the command was excellent. The "Figure of Merit" for the entire Brigade was 83.22 per cent; for the leading Regiment 94.74 per cent., and for the leading Company 97.46, followed by twelve other Companies ranging from 97.42 to 91.65 per cent. for the entire season. See General Orders No. 11, June 24, 1892, page 109.

ANNUAL ENCAMPMENT.

In accordance with orders from this office Brigadier-General George Haven assembled his command at the "State Military Rendezvous," Niantic, Conn., on the 13th day of August for an eight-days' tour of duty.

For the second time it was demonstrated that the additional two days in camp is in the interest of true economy for the State, and of unquestionable benefit to the Brigade.

The assembling of the Troops for the first time in a new order of formation was looked forward to with considerable interest by the military men of the State. All but the hypercritical were well satis-

fied with the exhibition of intelligence and power to grasp the situation on the part of officers and men of the Connecticut National Guard. By Monday evening the command had adapted itself to the changed conditions, and thereafter ceremonies and drills were, all things considered, exceedingly well performed. Guard duty was simply *bad*. I ascribe the falling off in this matter to the absorbing efforts of commandants of Companies to have their commands as well instructed in the new drill regulations as possible. I believe this fault will be rectified during the present drill season, and that at the encampment of 1893 the friends of the Guard will find little to criticise.

The camp was too noisy at night, and the reason for this is easily found. If officers set a good example, a command with the intelligence of the Connecticut Guard will be sure to follow it.

RIFLE PRACTICE AND TOURNAMENT.

Rifle practice at the ranges, supervised by the Regimental Inspectors of Rifle Practice, was followed, as usual, during the summer and fall, and the "Brigade Tournament" closed the season; in that event teams of twelve from each of the four regiments competed.

The first prize was won by the First Regiment team; score, 200 and 500 yards—626. The second prize was won by the Second Regiment team; score, 200 and 500 yards—610. The third prize was won by the Third Regiment team; score, 200 and 500 yards—609. The members of the first prize team each received from the State a handsome medal.

EXAMINING BOARD.

An examining board, consisting of ex-Colonel Walter J. Leavenworth, ex-Lieutenant-Colonel William H. Bentley, ex-Major Thomas T. Welles, and First Lieutenant W. H. C. Bowen, Fifth Infantry U. S. A., on duty at General Headquarters, was convened by G. O. Nos. 15 and 104, before which appointed officers were ordered. It is safe to say that never before in this State have officers been so thoroughly tested in the knowledge necessary to entitle them to be commissioned by the Commander-in-Chief. It is a credit to the Connecticut National Guard that ninety-four of those examined were recommended for commission. Attention is called to the report of the Board, page 63.

FALL MUSTER AND INSPECTION.

The annual inspection of State property, armories, uniforms, arms, etc., was made by the Quartermaster-General's Department in September, and the several organizations were mustered by the Brigade Commander, assisted by his Staff, between the 10th and 25th of November. Where two or more companies were located in an armory, a review preceded the muster. General Haven reports good attendance and a very satisfactory condition existing in the entire command.

NEW YORK AND CHICAGO.

On Wednesday, October 12, 1892, upon invitation of New York city, our State took part in the great military parade in celebration of the discovery of America. The Commander-in-Chief and Staff, the First, Second, Third, and Fourth Regiments, First and Second Separate Companies, Machine-Gun Platoons, Hospital and Signal Corps and ambulances were present. The Brigade Commander remarks in his report: "The march of the Brigade up Broadway and Fifth avenue was a continuous ovation, the men marched with great steadiness and precision, the equipment of the command was not surpassed by any Brigade in the column."

The comparison with National Guard organizations of other States was certainly not to the discredit of Connecticut.

The troops paraded without pay, and the State furnished transportation and subsistence. The morning reports of all commands showed a large percentage of membership "present for duty."

On Tuesday, October 18, 1892, yourself and Staff, and the State Commission, with the First Company Governor's Foot Guard, 134 uniforms, commanded by Major E. Henry Hyde, as escort, started by special train for Chicago, to assist in the dedicatory exercises of the World's Columbian Exposition buildings, arriving on Wednesday afternoon, 19th. On Thursday, the 20th, in the great civic parade, and on Friday, the 21st, in the military parade, our State took part. The press and people of Chicago were enthusiastic upon the subject of Connecticut's representation, and complimentary articles and comments abounded. The Sons and Daughters of the "Nutmeg State" gave proud greeting to our delegation. No military organization in Chicago received greater applause or higher praise than the Foot Guard.

No organization ever deserved commendation more than the Foot Guard.

The discipline of the command, on and off duty, was perfect, and the exhibition of marching and evolutions surpassed anything that came under my observation in Chicago. The arrival home on Monday, the 24th, without individual accident or sickness in the whole party, handsomely completed a most memorable and honorable expedition.

EXPENSES OF THE NATIONAL GUARD.

The following amounts have been disbursed by the respective departments, on account of the military of the State, during the *fifteen months* ending September 30, 1892. (By the act of June 19, 1889, the fiscal year ends September 30th, instead of June 30th):

Adjutant-General's Office (for printing, stationery, and general office expenses,)	\$4,901.69
Quartermaster-General's Department,	92,032.20
Paymaster-General (including two 8-day encampments),	116,151.68
Comptroller (salaries, office expenses, etc., and audit),	12,041.90
	\$225,127.47

SUMMARY.

The reports of the Brigade Commander show for spring parades:

First Regiment,	Attendance, 622, or 91.61 per cent.
Second Regiment,	" 667, " 95.42 "
Third Regiment,	" 464, " 89.92 "
Fourth Regiment,	" 471, " 89.04 "
Separate Companies (2),	" 91, " 76.52 "
Battery "A," Light Artillery,	" 75, " 94.94 "
Brigade,	" 2,390, " 91.81 "

ANNUAL ENCAMPMENT.

	FIRST DAY.			AVERAGE 8 DAYS.		
	Present.	Absent.	Per Cent. Present.	Present.	Absent.	Per Cent. Present.
Brigade Headquarters,	13	0	100.00	13	0	100.00
First Regiment,	647	63	91.13	642	67	90.55
Second Regiment,	703	21	97.10	700	24	96.68
Third Regiment,	517	21	96.10	516	21	96.09
Fourth Regiment,	521	30	94.56	516	34	93.83
Separate Companies (2),	98	21	82.35	101	18	84.87
Battery "A," Light Artillery,	81	2	97.50	82	1	98.79
Brigade,	2,580	158	94.23	2,570	165	93.97

ADJUTANT-GENERAL'S REPORT.

ANNUAL MUSTER.

	Present.	Absent.	Per Ct. Present.
Brigade Headquarters,	12	1	92.30
First Regiment,	642	81	88.80
Second Regiment,	687	38	94.76
Third Regiment,	471	68	87.38
Fourth Regiment,	491	88	84.80
First Separate Company,	49	10	83.05
Second Separate Company,	48	13	78.69
Battery "A", Light Artillery,	68	13	83.95
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Brigade,	2,468	312	88.78

The reports of regimental commanders, brigade and regimental staff officers, on file in this office, cover in detail all the tours of duty of the command during the year, but are too voluminous for publication in this report—a matter I regret because of the many practical suggestions made by competent officers.

All agree, Brigade Commander, Brigade Inspector, Medical Director, and others, with a standing recommendation, that one of the great needs of the command (I think the greatest) is a change in the method of rationing the troops in camp. Pennsylvania does this thing right, as was demonstrated at "Homestead" within the year.

All, too, note the necessity for a better arm. Effort should not be relaxed to get from the United States government a sufficient number of the latest pattern Springfield rifle to arm the whole command.

The clothing will very soon have to be renewed.

Taken all in all, the Connecticut National Guard is in pretty good form. The Brigade Commander and his Staff proved their fitness for the positions they hold at the last encampment, when they, for the first time, assumed their duties under new conditions, with most commendable results.

The interests of the four regiments are in good hands. Colonel Burdett of the First has had years of experience and responsibility on the Brigade Staff. Colonel Doherty of the Second, the senior Colonel, is a veteran of the Connecticut National Guard. Colonel Tyler of the Third is a retired officer of the United States Army. Colonel Frost of the Fourth has had good service in that regiment, and is alive to its every need. All are zealous officers and well fitted for the responsible positions they hold. Since I have known anything

about the Brigade of Connecticut National Guard, it has not, as a whole, been better officered.

The militia law of the State will need revision to meet the requirements of the new drill regulations, and to perfect the organization of the National Guard. I have seen no reason to change my opinion expressed a year ago, regarding the eight company, two battalion formation of our four regiments, and I still believe the maximum strength of companies should be raised, as then suggested, from 68 to 76.

In the matter of Field Officers it may be advisable to have a Major for each Battalion, though the command of one of them is an excellent school for the Lieutenant-Colonel to fit himself for higher duties. Battalion Adjutants and Sergeant-Majors should be detailed Lieutenants and Sergeants of the line.

In the revision of the Militia Law *all Staff grades* should have careful and intelligent consideration. The General Staff, in particular, is top-heavy with *rank*. Five Brigadier-Generals and six Colonels is simply ridiculous. The promiscuous bestowal of high staff rank belittles the grades, is moreover demoralizing to the force, and discouraging to hard-working regimental officers, who have to *win* their spurs before they wear them.

In conclusion, I am confirmed, by my three years' service upon your Staff, in my previously formed opinions: 1st. That greater permanency should be given the position of Adjutant-General and that he should have the added function of Inspector-General. New York New Jersey, Rhode Island, Massachusetts, and other States continue competent men in this most responsible position, regardless of political changes, and the result is immensely to the benefit of the States and troops. 2d. The Staff appointments, general, brigade, and regimental, should be made *because of fitness for the place*, and as a reward for faithful military service to the State. The material to make selection from is abundant; an appointment from the retired list or from the active roster would have the respect of the officers and men of the Brigade, because they would feel that the appointee knew *something* of military affairs, and then the Staff officer might be *used* to the benefit of the command. I know this is also the judgment of a great majority of the best officers of the Connecticut National Guard, active and retired. *This should be fixed by law.*

I have the honor to present herewith reports, tabulated statements, etc., as follows:

1. Roster of the Commander-in-Chief and Staff and the National Guard, November 30, 1892.
2. Military Enrollment, 1891.
3. Reports of Brigadier-General commanding Brigade, C. N. G.
4. Report of Major commanding First Company Governor's Foot Guard.
5. Report of Examining Board.
6. Report of Assistant Adjutant-General regarding Pensions and War Service Claims.
7. General Orders, Important Special Orders, and Circular.

I am, Sir, very respectfully, your obedient servant,

ANDREW H. EMBLER,

Adjutant-General.

[1.]

ROSTER.

COMMANDER-IN-CHIEF AND STAFF

AND THE

CONNECTICUT NATIONAL GUARD.

NOVEMBER 30, 1892.

ROSTER. COMMANDER-IN-CHIEF AND STAFF.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	In U. S. Army or Navy.
<i>Commander-in-Chief.</i> Governor MORGAN G. BULKELEY, Hartford; inaug. Jan. 10, 1889.	Hartford.	54	East Had- dam, Conn.	In National Guard or Militia of this or any other State.	Private Co. G. 13th Regt. Inf. N. Y. Vols., May 28, 1862; dis. Sept. 12, 1862.
<i>STAFF.</i> <i>Adjutant-General.</i> Brig. Gen. Andrew H. Embler, New Haven; Jan. 10, 1890.	New Haven.	58	New York, N. Y.	Private Co. H, 71st Reg. N. Y. S. M., 1854; 1st Lieut. April, 1861; Capt. Aug., 1861. First Lieut. Co. K, 2d Reg. N. Y. S. M., (82d Regt. Vols.), Nov., 1861; Capt. Co. E, July, 1862. Captain 1st Co. G. F. G., Conn., 1879; Major. 1880; res. Jan. 30, 1882. Captain Co. D, 2d Regt. C. N. G., Nov. 20, 1884. Adjutant General State of Conn., Jan. 10, 1890.	1st Sergt. Co. H, 71st Regt. N. Y. S. M., April 19, 1861; 1st Lieut; M. O. July 24, 1861, exp. term service. 1st Lieutenant Co. K, 2d Regt. N. Y. S. M. (82d Regt. N. Y. Vols.), Nov., 1861; Capt. Co. E, July, 1862; Capt. U. S. Vols. and A. D. C. to Major- Gen. John Gibbon, com- manding 2d Div., 2d A. C., Army of the Potomac, May, 1864; Major U. S. Vols. and A. D. C. to Maj. Gen. John Gibbon, com'd 24th A. C., Army of the Potomac, Jan., 1865; wounded July 21, 1861, Sept. 17, 1862, and May 5, 1864; hon. dis. Dec., 1865.

<i>Quartermaster-General.</i> Brigadier-General Wm. B. Rudd, Lakeville; Jan. 10, 1889.	Lakeville.	54	Fredonia, N. Y.	Private Co. A, 54th Regt. N. G. S. N. Y., 1857. Adjutant 107th Regt. N. G. S. N. Y., 1865. Colonel and A. D. C. on Staff of Com- mander-in-Chief State of Conn., Jan. 5, 1881; hon. dis. Jan. 3, 1883. Quartermaster-General State of Conn., Jan. 10, 1889.	Private 98th Regt. N. Y. Vols., July 6, 1861; Sergt.-Maj. Oct. 1861; Lieut. Co. K, May, 1862; res. Oct. 28, 1862.
		35	Brooklyn, N. Y.		
		50	Windham, Conn.		
<i>Surgeon-General.</i> Brigadier-General Henry Hanger- ford, Stamford; Jan. 10, 1889.	Stamford.	44	New Haven, Conn.	Private Co. K, 1st Regt. C. N. G., Feb. 11, 1879; Commissary-Sergt. March 31, 1880; disc. Feb. 3, 1884. Re-en. Feb. 11, 1884, Commissary-Sergt.; dis. Feb. 11, 1886. Re-en. Feb. 11, 1886, Commissary-Sergt.; 1st Lieut. and Paymaster 1st Regt. C. N. G., April 22, 1886; res. Jan. 10, 1889, to accept appointment on staff of Gov. Bulkeley.	
		37	Malone, N. Y.	Paymaster General State of Conn., Jan. 10, 1889.	
		36	New Haven, Conn.	Private Co. F, 2d Regt. C. N. G., Nov. 3, 1873; dis. Nov. 30, 1875. Col. and A. D. C., State of Conn., Jan. 10, 1889.	
<i>Commissary-General.</i> Brigadier-General Eugene S. Boss, Windham; Jan. 10, 1889.	Willimantic.				
<i>Paymaster-General.</i> Brigadier-General Wallace T. Fenn, Wethersfield; Jan. 10, 1889.	Wethersfield.				
<i>Aid-de-Camp.</i> Colonel William C. Skinner, Hartford; Jan. 10, 1889.	Hartford.				
<i>Aid-de-Camp.</i> Colonel James Y. Fairman, Middletown; Jan. 10, 1889.	Middletown.				

ADJUTANT-GENERAL'S REPORT.

COMMANDER-IN-CHIEF AND STAFF.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>Aid-de-Camp.</i> Colonel William E. A. Bulkeley, Hartford; Aug. 8, 1890.	Hartford.	25	Hartford, Conn.		
<i>Aid-de-Camp.</i> Colonel Francis T. Maxwell, Vernon; Apr. 22, 1892.	Rockville.	31	Vernon, Conn.		
<i>Assistant Adjutant-General.</i> Colonel William H. Tubbs, New London; Feb. 10, 1892.	Hartford.	54	Norwich, Conn.	Private Co. B, 3d Regt. militia, 1854; Corp., 1855; 1st Serg., 1861. (Promoted Capt. Co. E., 14th C. V., June 15, 1862.) Capt. Co. D., 3d Regt., C. N. G., Sept. 23, 1870; Major, May 1, 1873; Lieut.-Col., Dec. 4, 1875; Col., Mch. 6, 1878; resigned June 30, 1886; Asst. Adj.-Gen., State of Conn., Feb. 10, 1892.	Captain Co. E, 14th Regt., Conn. Vols., June 15, 1862; wounded Dec. 13, 1862, at Fredericks- burgh, Va.; dis. disabil- ity, Feb. 20, 1863. Capt. and Com'y Subsis- tence, U. S. Vols., Jan. 28, 1865; on Staff of Gen. Peter Stagg, Mich. Cav.; Brigade 1865; Staff of Maj.-Gen. P. E. Conner as Chief Commissary of Powder River Indian ex- pedition, 1865-66; brevet Major, Apr. 17, 1866; dis. May 11, 1866.

Assistant Quartermaster-General.
Colonel Henry C. Morgan,
Colchester; Jan. 6, 1887.

Hartford.

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Brooklyn,
N. Y.

Asst. Q. M.-Gen. State of Conn., Jan. 5,
1881; hon. dis. Jan. 3, 1883.
Asst. Q. M.-Gen. State of Conn., Jan. 6,
1887; re-appointed Jan 10, 1889.

1st Lieut., 12th Regt. U. S.
Inf., May 14, 1861; Capt.
June 16, 1863; wounded
twice; lost left leg at bat-
tle of the Wilderness;
brevet Major U. S. A.,
July 2, 1863; brevet
Lieut. Colonel U. S. A.,
May 5, 1864; trans. to
30th Regt. U. S. Inf.
Sept. 21, 1866; retired
Feb. 17, 1868.

CONNECTICUT NATIONAL GUARD.

Brigadier-General.
George Haven,
New London; May 28, 1892.

New London.

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New London,
Conn.

2d Lieut. Co. D, 3d Regt. C. N. G., July
6, 1865; 1st Lieut. Dec. 1, 1865; Capt.
Aug. 16, 1867; Major 3d Regt. C. N.
G., Sept. 3, 1870; Lieut.-Col. Apr. 20,
1872; res. April 21, 1873.
Captain and Adjt. 3d Regt. C. N. G.,
Feb. 18, 1879; Major Mar. 20, 1882;
Colonel July 12, 1886.
Brigadier-General commanding Brigade,
C. N. G., May 28, 1892.

Private Rifle Co. C, 2d
Regt. Conn. Vols. (3
mos.), May 7, 1861; dis.
Aug. 7, 1861.
Private Co. C, 1st Regt.
Cav'y Conn. Vols., Nov.
25, 1861; Corp.; dis. Nov.
22, 1864, ex. term service.

Assistant Adjutant-General.
Lieut. Colonel George M. Cole,
New London; May 30, 1892.

New London.

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Portsmouth,
Eng.

Private Indiana Legion, Nov., 1882; 1st
Sergt.; dis.
Private 3d M. G. Platoon 3d Regt. C. N.
G., Feb. 7, 1885; Sergt. Apr. 29, 1885;
Com'sy-Sergt. 3d Regt. C. N. G., Aug.
6, 1886; 1st Lieut. and Paymaster Jan.
7, 1887. Captain Co. I, 3d Regt. C.
N. G., May 8, 1888; res. Jan. 20, 1891.
Captain and Adjt. 3d Regt. C. N. G.,
Aug. 15, 1891.
Lieutenant-Colonel and A. A. G. of Bri-
gade, C. N. G., May 30, 1892.

CONNECTICUT NATIONAL GUARD. — CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>Brigade Inspector.</i> Major Charles Cheney, So. Manchester; June 6, 1892.	South Man- chester.	26	Hartford, Conn.	Private Co. G, 1st Reg. C. N. G., Nov. 8, 1886; Corp. Jan. 1, 1889; 2d Lieut. Feb. 1, 1889; 1st Lieut. Nov. 20, 1890; res. Jan. 6, 1892. Major and Brigade Inspector C. N. G., June 6, 1892.	
<i>Brigade Quartermaster.</i> Major William F. Bidwell, Killingly; June 6, 1892.	Killingly.	36	Norwich, Conn.	First Lieut. Co. C, 3d Regt. C. N. G., May 28, 1878; Capt. Dec. 30, 1880; res. Nov. 14, 1881. Captain Co. C, 3d Regt. C. N. G., Nov. 21, 1881; Major July 12, 1886. Major and Brigade Quartermaster C. N. G., June 6, 1892.	
<i>Brigade Commissary.</i> Major Frederick Farnsworth, New London; June 6, 1892.	New London.	50	Norwich, Conn.	First Lieutenant and Paymaster 3d Regt., C. N. G., June 15, 1890. Major and Brigade Commissary C. N. G., June 6, 1892.	

<p><i>Brigade Inspector of Rifle Practice.</i> Major George E. Albee, New Haven; June 6, 1892.</p>	<p>Westville.</p>	<p>48 Lisbon, N. H.</p>	<p>Captain Co. D, 2d Regt., C. N. G., June 23, 1891; res. Dec. 15, 1891. Major and Brigade Inspector of Rifle Practice, C. N. G., June 6, 1892.</p>	<p>Private Co. G, 1st Regt. Berdan's U. S. Sharpshooters, June 25, 1862; wounded Aug. 30, 1862, 2d Bull Run; dis. Oct. 22, 1862; Private 3d Battery, Wisconsin Light Artillery, Dec. 23, 1863; 2d Lieut. 36th Wis. Vols., Mar. 8, 1864; captured at Reams Station, Aug. 25, 1864; exchanged Dec. 16, 1864. 1st Lieut. Jan. 16, 1865; Brevet 1st Lieut. Vols., Mar. 13, 1865, for gallant and meritorious service during the war. Mustered out July 12, 1865; 2d Lieut. 36th U. S. C. T., Sept. 18, 1865; mustered out Oct. 28, 1866; 2d Lieut. 41st U. S. Inf., 1866; 1st Lieut. Nov. 4, 1867. Trans. to 24th U. S. Inf., Nov. 11, 1869. Placed on retired list U. S. Army June 28, 1878.</p>
<p><i>Medical Director.</i> Lieut.-Col. Leonard B. Almy, Norwich; June 6, 1892.</p>	<p>Norwich.</p>	<p>41 Norwich, Conn.</p>	<p>Major and Surgeon 3d Regt., C. N. G., July 22, 1886. Lieutenant Colonel and Medical Director C. N. G., June 6, 1892.</p>	

CONNECTICUT NATIONAL GUARD. — CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>Engineer and Signal Officer.</i> Major William W. Starr, Jr., Bridgeport; June 6, 1892.	Bridgeport.	44	Derby, Conn.	First Lieut. and Signal Officer 4th Regt., C. N. G., Mch. 4, 1885; dis. Aug. 1, 1889. First Lieut. commanding 4th Signal Corps, 4th Regt., C. N. G., Aug. 1, 1889; res. Jan. 16, 1890. Major and Engineer and Signal Officer, C. N. G., June 6, 1892.	
<i>Aid-de-Camp.</i> Captain Howard A. Giddings, Hartford; June 6, 1892.	Hartford.	24	Hartford, Conn.	Private Co. F, 1st Regt., C. N. G., May 23, 1887; trans. to 1st Signal Corps, 1st Regt. C. N. G., Sept. 30, 1889; Sergt. Oct. 2, 1889; 1st Lieut. comd'g 1st S. C. 1st Regt. C. N. G., May 8, 1891. Captain and A. D. C. Brigade Staff C. N. G., June 6, 1892.	
<i>Aid-de-Camp.</i> Captain William H. Saxton, Jr., New London; June 6, 1892.	New London.	22	Amherst, Mass.	Private 3d Machine-Gun Platoon 3d Regt. C. N. G., Nov. 6, 1890; Corp'l Jan. 19, 1892. Captain and A. D. C. Brigade Staff C. N. G., June 6, 1892.	

LIGHT ARTILLERY.

BATTERY A. — GUILFORD.

Captain.

Arthur S. Fowler,
Guilford; March 11, 1886.

ADJ. GEN. — 2

FIRST PLATOON. — GUILFORD.

First Lieutenant.

Barlow S. Honce,
Branford; Dec. 21, 1891.

Second Lieutenant.

George T. Fowler,
North Branford; Dec. 21, 1891.

Guilford.	49	Guilford, Conn.	Private 1st Sec. Batt'y C (Guilford), C. N. G., May 8, 1871 (changed to 2d Sec. Batt'y A, Aug. 1, 1871, to 2d Sec. Lt. Art'y. C. N. G., Nov. 1, 1871; and to 1st Sec. Lt. Art'y. C. N. G., Mar. 29, 1875); Corp.; dis. May 16, 1879. Re-en. July 28, 1879 (changed to 1st Platoon Lt. Art'y. C. N. G., Apr. 15, 1880, and to 1st Platoon Batt'y A, C. N. G., November 28, 1881); Corp.; Sergt.; dis. July 27, 1881. Re-en. Sept. 3, 1881; Sergt.; 2d Lieut. Dec. 5, 1881; 1st Lieut. Jan. 22, 1883; Capt. Batt'y A, C. N. G., Mar. 11, 1886.
Branford.	37	Freehold, N. J.	Private 1st Platoon Batt'y A, C. N. G., Aug. 12, 1883; Corp. Aug. 1, 1884; Sergt. May 17, 1886; 2d Lieut. Feb. 27, 1888; 1st Lieut. Dec. 21, 1891.
North Branford.	36	Salem, Conn.	Private 2d Sec. Lt. Art'y. (Guilford), Dec. 28, 1874 (changed to 1st Sec. Lt. Art'y. C. N. G., Mch. 29, 1875); dis. Feb. 26, 1880 (changed to 1st Plat. Lt. Art'y. C. N. G., April 15, 1880, and to 1st Plat. Batt. A Nov. 28, 1881). Re-en. May 21, 1880; dis. May 20, 1882. Re-en. Sept. 1, 1882; Corp., May 1, 1884; Sergt. Aug. 11, 1886; dis. Sept. 1, 1887. Re-en. Jan. 23, 1888; Sergt. Jan. 23, 1888; dis. Jan. 23, 1890. Re-en. 1st Sergt., Aug. 12, 1890; 2d Lieut. 1st Plat. Batt'y A, C. N. G., Dec. 21, 1891.

CONNECTICUT NATIONAL GUARD. BATTERY A.—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
SECOND PLATOON. — BRANFORD.					
<i>First Lieutenant.</i> James T. Reynolds, Branford; December 17, 1885	Branford.	36	Branford, Conn.	Private 2d Platoon Batt'y A, C. N. G., May 20, 1884; Corp. May 26, 1884; 2d Lieut. Dec. 15, 1884; 1st Lieut. Dec. 17, 1885.	
<i>Second Lieutenant.</i> James H. Barker, Branford; January 7, 1886.	Branford.	40	Branford, Conn.	Private 2d Platoon Batt'y A, C. N. G., May 15, 1884; Sergt. Aug. 21, 1885; 2d Lieut. Jan. 7, 1886.	
FIRST REGIMENT (INFANTRY).					
<i>Colonel.</i> Charles L. Burdett, Hartford; June 18, 1892.	Hartford.	44	Nantucket, Mass.	Private Co. K, 1st Regt. C. N. G., Apr. 13, 1880; Corp. Jan. 12, 1881; Major and Engineer and Signal Officer C. N. G., June 14, 1883. Colonel 1st Regt. C. N. G., Jan. 18, 1892.	
<i>Lieutenant-Colonel.</i> Alfred L. Thompson, New Britain; April 15, 1890.	New Britain.	41	Portland, Conn.	Private Co. E, 1st Regt. C. N. G., June 20, 1877; Corp. Feb. 7, 1878; Sergt. April 20, 1880; 1st Sergt. Dec. 24, 1881; dis. June 20, 1882. Re-en. June 20, 1882; 1st Sergt.; 2d Lieut. June 22, 1883; Capt. Oct. 3, 1883; Lieut.-Colonel 1st Regt. C. N. G., April 15, 1890.	
<i>Major.</i> John Hickey, So. Manchester; Oct. 30, 1892.	South Man- chester.	35	Manchester, Conn.	Private Co. G, 1st Regt. C. N. G., Apr. 2, 1878; Corp. Mar. 1, 1880; Sergt. June 6, 1881; 1st Lieut. Feb. 5, 1883; Capt. Feb. 7, 1887; Major 1st Regt. C. N. G., Oct. 30, 1890.	

<i>Adjutant. — Captain.</i> Henry S. Redfield, Hartford; Feb. 15, 1892.	Hartford.	27	Hartford, Conn.	Private Co. K, 1st Regt. C. N. G., Apr. 24, 1883; Corp.; dis. Apr. 24, 1888. Re-en. May 4, 1888, Sergt.; Sergt.-Major Mar. 12, 1889; dis. Jan. 10, 1890, to accept appointment on Staff of Commander-in-Chief; res. Feb. 13, 1892. Capt. and Adjt. 1st Regt. C. N. G., Feb. 15, 1892.
	Hartford.	27	Hartford, Conn.	Private Co. F, 1st Regt. C. N. G., Feb. 1, 1886; dis. Feb. 1, 1891; 1st Lieut. and Quartermaster 1st Regt. C. N. G., Feb. 15, 1892.
<i>Paymaster. — First Lieutenant.</i> Frederic C. Billings, Hartford; June 1, 1892.	Hartford.	28	Utica, N. Y.	Private Co. K, 1st Regt. C. N. G., Feb. 4, 1884; dis. Feb. 4, 1889; 1st Lieut. and Paymaster 1st Regt. C. N. G., June 1, 1892.
<i>Surgeon. — Major.</i> Thomas F. Rockwell, Rockville; May 20, 1890.	Rockville.	38	New York, N. Y.	
<i>Assistant Surgeon. — First Lieut.</i> Frank H. Peltier, Hartford; May 20, 1890.	Hartford.	28	Clifton Spgs., N. Y.	Private Co. F, 1st Regt. C. N. G., May 28, 1884; dis. May 28, 1889; 1st Lieut. and Asst. Surgeon, 1st Regt. C. N. G., May 20, 1890.
<i>Inspector of Rifle Practice. — Capt.</i> William C. Cheney, So. Manchester; Feb. 15, 1892.	Hartford.	28	So. Manches'r, Conn.	Private Co. K, 1st Regt. C. N. G., Dec. 15, 1886; Corp.; Sergt.; 1st Lieut. and Paymaster 1st Regt. C. N. G., May 20, 1890. Capt. and I. K. P. 1st Regt. Feb. 15, 1892.
<i>Chaplain.</i> Henry H. Kelsey, Hartford; August 8, 1890.	Hartford.	40	Le Roy, N. Y.	

CONNECTICUT NATIONAL GUARD, FIRST REGIMENT (INFANTRY).—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
COMPANY A. — HARTFORD. <i>Captain.</i> Edward Schulze, Hartford; December 9, 1884.	Hartford.	43	Hessen, Cas- sel, Germany.	Private Co. A, 1st Regt. C. N. G., Jan. 23, 1872; Sergt. Jan. 31, 1872; 1st Sergt. Sept. 25, 1872; 1st Lieut. Feb. 17, 1874; Capt. Dec. 9, 1884.	Private U. S. Inf. Apr. 20, 1867; assigned to Co. E, 37th Regt.; appointed Comp'y Artificer; trans- ferred to Co. B, 3d U. S. Infantry, dis. April 20, 1870, exp. term ser.
<i>First Lieutenant.</i> James C. Bailey, Hartford; July 14, 1892.	Hartford.	32	England.	Private Co. A, 1st Regt. C. N. G., July 6, 1881; Corp. Feb. 6, 1885; Sergt. May 7, 1885; 1st Sergt. Sept. 11, 1885; dis. July 6, 1886. Re-en. July 6, 1886; 1st Sergt.; dis. July 6, 1888. Re-en. July 6, 1888; 1st Sergt.; 2d Lieut. Apr. 18, 1889; 1st Lieut. July 14, 1892.	
<i>Second Lieutenant.</i> Edwin E. Lamb, Hartford; July 14, 1892.	Hartford.	22	Hartford, Conn.	Musician Co. A, 1st Regt. C. N. G., Aug. 1, 1889; 2d Lieut. July 14, 1892.	
COMPANY B. — HARTFORD. <i>Captain.</i> Thomas F. Flanagan, Hartford, January 15, 1892.	Hartford.	37	E. Hartford, Conn.	Private Co. B, 1st Regt. C. N. G., Apr. 28, 1874; Corp. Apr. 9, 1878; 2d Lieut. Dec. 27, 1878; 1st Lieut. Aug. 22, 1879; Capt. June 26, 1886; res. Jan. 23, 1889; Capt. Jan. 15, 1892.	

<i>First Lieutenant.</i> Dennis J. Murphy, Hartford; October 6, 1891.	Hartford.	32	Hartford, Conn.	Private Co. B, 1st Regt. C. N. G., Feb. 5, 1884; Corp. May 12, 1888; dis. Feb. 5, 1889. Re-en. Feb. 5, 1889; Corp.; Sergt. Mar. 4, 1889; dis. Feb. 5, 1891. Re-en. Apr. 27, 1891; 1st Sergt. Apr. 27, 1891; 1st Lieut. Oct. 6, 1891.
	Hartford.	26	Clare, Ireland.	Private Co. B, 1st Regt. C. N. G., Feb. 2, 1886; Corp. Aug. 2, 1888; dis. Feb. 2, 1891; Re-en. Mar. 2, 1891; Corp.; Sergt. Apr. 26, 1891; 2d Lieut. Oct. 6, 1891.
<i>Second Lieutenant.</i> Thomas P. Hastings, Hartford; October 6, 1891.	Rockville.	29	Vernon, Conn.	Private Co. C, 1st Regt. C. N. G., Feb. 25, 1890; 2d Lieut. Mar. 11, 1890; 1st Lieut. Feb. 6, 1891; Capt. Mar 20, 1891.
	Rockville.	26	New Haven, Conn.	Private Co. C, 1st Regt. C. N. G., Aug. 20, 1891; 1st Lieut. May 24, 1892.
<i>First Lieutenant.</i> Harry M. Loomis, Rockville; May 24, 1892.	Rockville.	33	Germany.	Private Co. C, 1st Regt. C. N. G., Feb. 25, 1890; Sergt. May 16, 1890; 1st Sergt. May 1, 1891; 2d Lieut. May 24, 1892; dis. Nov. 3, 1892. 2d Lieut. Nov. 11, 1892.
	Rockville.	34	Bloomfield, Conn.	Private Co. D, 1st Regt. C. N. G., Jan. 5, 1882; Corp. Feb. 3, 1885; Sergt. June 8, 1886; dis. Jan. 5, 1887. Re-en. Feb. 3, 1887; Sergt.; dis. Feb. 3, 1889; Re-en. Mar. 1, 1889; Sergt.; 1st Sergt. Aug. 6, 1889; 2d Lieut. Feb. 18, 1890; 1st Lieut. May 5, 1890; Capt. June 7, 1892.
<i>Second Lieutenant.</i> J. Paul Haun, Rockville; Nov. 11, 1892.	New Britain.			
<i>COMPANY D.—NEW BRITAIN.</i> <i>Captain.</i> Frank W. Humphrey, New Britain; June 7, 1892.				

CONNECTICUT NATIONAL GUARD, FIRST REGIMENT (INFANTRY).—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>First Lieutenant.</i> Sidney M. Leonard, New Britain; June 7, 1892.	New Britain.	31	Hoosick Falls, N. Y.	Private Co. D, 1st Regt. C. N. G., June 3, 1887; Corp. July 5, 1888; Sergt. June 1, 1889; 2d Lieut. May 5, 1890; 1st Lieut. June 7, 1892.	
<i>Second Lieutenant.</i> Louis V. Schulz, New Britain; June 7, 1892.	New Britain.	25	Vernon, Conn.	Private Co. D, 1st Regt. C. N. G., July 30, 1884; Corp. June 8, 1886; Sergt. July 12, 1887; dis. July 30, 1889. Re en. July 30, 1889; Sergt.; 1st Sergt. June 3, 1890; dis. July 30, 1891. Re- en. July 30, 1891; 1st Sergt.; 2d Lieut. June 7, 1892.	
COMPANY E.—NEW BRITAIN.					
<i>Captain.</i> (Vacancy.)					
<i>First Lieutenant.</i> John E. Lynch, New Britain; Mch. 14, 1892.	New Britain.	25	New York, N. Y.	Private Co. E, 1st Regt. C. N. G., Nov. 16, 1885; dis. Aug. 16, 1886. Re-en. Nov. 29, 1886; Corp. Aug. 17, 1888; Sergt. Dec. 27, 1889; 1st Sergt. Sept 7, 1890; 2d Lieut. Nov. 25, 1890; 1st Lieut. Mar. 14, 1892.	

<p><i>Second Lieutenant.</i> William W. Bullen, Plainville, March 14, 1892.</p>	Plainville,	31	London, England.	Private Co. E, 1st Regt. C. N. G., Nov. 2, 1885; Corp. Aug. 14, 1888; Sergt. Oct. 13, 1890; dis. Nov. 2, 1890. Re-en. Nov. 3, 1890; 1st Sergt.; 2d Lieut. Mar. 14, 1892.
<p>COMPANY F.—HARTFORD. <i>Captain.</i> Alexander Allen, Hartford; July 26, 1892.</p>	Hartford.	43	Hartford, Conn.	Private Batty. D (Hartford), attached to 3d Regt. C. N. G., April 21, 1871 (changed to Co. F, 1st Regt., Aug. 1, 1871); Corp. Jan. 15, 1877; Sergt. Aug. 19, 1878; dis. April 29, 1879. Re-en. April 29, 1879; Sergt.; dis. Apr. 28, 1881. Re-en. Apr. 29, 1881; Sergt.; 2d Lieut. Nov. 21, 1881; Capt. Feb. 13, 1885. Major and Brigade Inspector C. N. G., Jan. 17, 1887; res. May 12, 1890. Private Co. F, 1st Regt. C. N. G., July 19, 1892; Capt. July 26, 1892.
<p><i>First Lieutenant.</i> Charles E. Johnson, Hartford; Aug. 2, 1892.</p>	Hartford.	31	Hartford, Conn.	Private Co. H, 2d Regt. C. N. G., Dec. 22, 1881; trans. to Co. F, 1st Regt., C. N. G., May 15, 1884; dis. Dec. 22, 1886. Re-en. Dec. 22, 1886; Corp. Dec. 22, 1886; dis. Dec. 22, 1888. Re-en. Dec. 22, 1888; Corp.; Sergt. Aug. 16, 1890; dis. Dec. 22, 1890. Re-en. July 20, 1892; 1st Lieut. Aug. 2, 1892.
<p><i>Second Lieutenant.</i> George W. Ripley, Hartford; July 26, 1892.</p>	Hartford.	35	So. Windsor, Conn.	Private Co. F, 1st Regt. C. N. G., July 25, 1882; Corp. Apr. 30, 1886; Sergt. Feb. 7, 1887; dis. July 25, 1887. Re-en. July 25, 1887; Sergt.; dis. July 25, 1889. Re-en. July 25, 1889; Sergt.; dis. Aug. 11, 1890. Re-en. July 21, 1892; 2d Lieut. July 26, 1892.

CONNECTICUT NATIONAL GUARD, FIRST REGIMENT (INFANTRY). — CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
COMPANY G.—S. MANCHESTER.					
<i>Captain.</i> Charles L. Bissell, So. Manchester; Nov. 20, 1890.	South Man- chester.	31	Harwinton, Conn.	Private Co. G, 1st Regt. C. N. G., Aug. 1, 1882; Corp. Feb. 12, 1883; Sergt. May 28, 1883; 2d Lieut. March 31, 1886; 1st Lieut. Feb. 7, 1887; Capt. Nov. 20, 1890.	
<i>First Lieutenant.</i> Henry R. Cheney, So. Manchester; Jan. 11, 1892.	South Man- chester.	23	Manchester, Conn.	Private Co. G, 1st Regt. C. N. G., May 29, 1889; 1st Lieut. Jan. 11, 1892.	
<i>Second Lieutenant.</i> Wesley B. Porter, So. Manchester; Nov. 20, 1890.	South Man- chester.	33	Lebanon, Conn.	Private Co. G, 1st Regt. C. N. G., Feb. 22, 1881; Corp. Aug. 7, 1882; dis. June 30, 1884. Re-en. Feb. 18, 1889; Corp. July 1, 1889; 2d Lieut. Nov. 20, 1890.	
COMPANY H.—HARTFORD.					
<i>Captain.</i> Charles H. Patterson, Hartford; June 29, 1891.	Hartford.	33	Hartford, Conn.	Private Co. H, 1st Regt. C. N. G., Nov. 22, 1878; Corp. Oct. 7, 1881; Sergt. Aug. 17, 1882; 1st Sergt. May 1, 1883; dis. Nov. 22, 1883. Re-en. Nov. 24, 1883; 1st Sergt.; dis. Nov. 24, 1885. Re-en. Nov. 24, 1885; 1st Sergt.; 2d Lieut. Sept. 14, 1886; 1st Lieut. Jan. 22, 1891; Capt. June 29, 1891.	

Hartford.	28	Cambridgept, Mass.	Private Co. A, 1st Regt. C. N. G., Sept. 6, 1883; Corp. June 1, 1885; Sergt. Nov. 13, 1885; dis. Sept. 6, 1888. Re-en. Sept. 6, 1888; Sergt.; 1st Sergt. Aug. 9, 1889; dis. Sept. 6, 1890. Re-en. Sept. 6, 1890; 1st Sergt.; 1st Lieut. Co. H, 1st Regt. C. N. G., July 1, 1891.
Hartford.	25	Hartford, Conn.	Private Co. H, 1st Regt. C. N. G., May 1, 1885; Corp. Aug. 5, 1886; Sergt. Mar. 22, 1887; dis. May 1, 1890. Re-en. May 1, 1890; Com'sy Sergt. 1st Regt. C. N. G., May 21, 1890; 2d Lieut. Co. H, 1st Regt., July 1, 1891.
New Britain.	32	New Britain, Conn.	Private Co. I, 1st Regt. C. N. G., Aug. 9, 1890; 1st Lieut. Co. I, 1st Regt. C. N. G., Aug. 15, 1890; Captain June 23, 1891.
New Britain.	36	New Britain, Conn.	Private Co. I, 1st Regt. C. N. G., Aug. 9, 1890; 2d Lieut. Aug. 15, 1890; 1st Lieut. June 23, 1891.
New Britain.	29	New Britain, Conn.	Private Co. I, 1st Regt. C. N. G., Aug. 9, 1890; 1st Sergt. Oct. 7, 1890; 2d Lieut. June 23, 1891.

COMPANY I.—NEW BRITAIN.

Captain.

Charles H. Moore,
New Britain; June 23, 1891.

First Lieutenant.

Joseph R. Andrews,
New Britain; June 23, 1891.

Second Lieutenant.

Theodore A. Stanley,
New Britain; June 23, 1891.

CONNECTICUT NATIONAL GUARD, FIRST REGIMENT (INFANTRY).—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	In National Guard or Militia of this or any other State.	U. S. Army or Navy.
COMPANY K.—HARTFORD.					
<i>Captain.</i> Charles H. Slocum, Hartford; March 9, 1891.	Hartford.	32	Wallingford, Conn.	Private Co. K, 1st Regt. C. N. G., Feb. 10, 1879; Corp. April 7, 1879; dis. Feb. 10, 1884. Re-en. Feb. 11, 1884; Corp.; dis. Feb. 11, 1886. Re-en. Feb. 12, 1886; Corp.; Sergt. Feb. 12, 1886; dis. Feb. 12, 1888. Re-en. Feb. 13, 1888; Sergt.; 1st Sergt. Feb. 13, 1888; 2d Lieut. July 28, 1888; 1st Lieut. June 24, 1889; Capt. Mar. 9, 1891.	
<i>First Lieutenant.</i> Henry H. Saunders, Hartford; March 9, 1891.	Hartford.	34	Hartford, Conn.	Private Co. K, 1st Regt. C. N. G., Feb. 20, 1879; dis. Feb. 20, 1884. Re-en. Feb. 21, 1884; Corp. May 26, 1884; dis. Feb. 21, 1886. Re-en. Feb. 22, 1886; Corp.; dis. Feb. 22, 1888. Re- en. Feb. 27, 1888; Corp.; Sergt. May 7, 1888; 2d Lieut. June 24, 1889; 1st Lieut. Mar. 9, 1891.	
<i>Second Lieutenant.</i> Edward H. Waterman, Hartford; March 9, 1891.	Hartford.	36	Hartford, Conn.	Private Co. K, 1st Regt. C. N. G., June 19, 1879; Corp. May 17, 1883; dis. June 19, 1884. Re-en. June 20, 1884; Corp.; Sergt. May 17, 1886; dis. June 20, 1886. Re-en. June 21, 1886; Sergt.; dis. June 21, 1888. Re-en. June 29, 1888; Sergt.; 1st Sergt. July 28, 1888; dis. June 29, 1890. Re-en. June 29, 1890; 1st Sergt.; 2d Lieut. Mar. 9, 1891.	

FIRST SIGNAL CORPS.—
HARTFORD.
First Lieutenant.
Arthur B. Jenkins,
Hartford; June 20, 1892.

FIRST MACHINE-GUN PLATOON.—
HARTFORD.
Second Lieutenant.
Henry Avery,
Hartford; June 14, 1886.

SECOND REGT.—INFANTRY.

Colonel.
John B. Doherty,
Waterbury; July 1, 1889.

Hartford.	31	Canton, Conn.	Private 1st Signal Corps, 1st Regt. C. N. G., Sept. 3, 1889; Corp. Nov. 16, 1889; Sergt. May 21, 1891; 1st Lieut. comd'g 1st S. C., 1st Regt. C. N. G., June 20, 1892.
Hartford.	42	England.	Private Co. H, 1st Regt. C. N. G., July 31, 1883; Corp. Aug. 25, 1884; Sergt. Feb. 19, 1886; 2d Lieut. comd'g 1st M.-G. Platoon June 14, 1886.
Waterbury.	39	New Brunswick, Can.	Private Co. A, 2d Regt. C. N. G., Jan. 29, 1872; Corp. Dec. 14, 1874; Sergt. Aug. 17, 1877; dis. April 17, 1879. Re en. April 17, 1879; Sergt.; 1st Sergt. Aug. 17, 1879; 2d Lieut. May 20, 1880; 1st Lieut. June 2, 1882; Capt. Aug. 1, 1883; Major 2d Regt. C. N. G., Feb. 16, 1885; Lieut.-Col. Jan. 24, 1887; Col. July 1, 1889.
Waterbury.	37	Vernon, Conn.	Private Co. C (Rockville), 1st Regt. C. N. G., Apr. 10, 1874; Corp. June 15, 1874; dis. Nov. 22, 1878. Second Lieut. Co. A, 2d Regt. C. N. G., March 22, 1886; 1st Lieut. June 21, 1886; Captain June 13, 1887; Major Feb. 3, 1890; Lieut.-Col. May 3, 1892.

Lieutenant-Colonel.
Lucien F. Burpee,
Waterbury; May 3, 1892.

CONNECTICUT NATIONAL GUARD. SECOND REGIMENT (INFANTRY).—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>Major.</i> Timothy F. Callahan, New Haven; May 25, 1892.	New Haven.	44	Ireland.	Private Co. C, 2d Regt. C. N. G., Apr. 1, 1882; Corp.; Sergt.; 1st Sergt.; dis. Nov. 18, 1878; 2d Lieut. Co. C, 2d Regt. C. N. G., June 12, 1883; 1st Lieut. Feb. 4, 1886; Capt. Oct. 20, 1887; dis. Oct. 14, 1889. Major, 2d Regt. C. N. G., May 25, 1892.	Private Co. H, 35th Regt. U. S. Infantry Nov. 18, 1867; Corp. June 10, 1868; trans. to 15th Regt. U. S. Inf.; Sergt. Aug. 11, 1870; dis. Nov. 5, 1870; exp. term service.
<i>Adjutant.—Captain.</i> Arthur M. Dickinson, Waterbury; July 23, 1889.	Waterbury.	33	Waterbury, Conn.		
<i>Quartermaster.—First Lieutenant.</i> George G. Blakeslee, Waterbury; July 26, 1889.	Waterbury.	31	Cincinnati, Ohio.		
<i>Paymaster.—First Lieutenant.</i> Rodmond V. Beach, New Haven; Jan. 25, 1892.	New Haven.	27	New Haven, Conn.	Private Co. F, 2d Regt. C. N. G., Jan. 21, 1891; 1st Lieut. and Paymaster, 2d Regt. C. N. G., Jan. 25, 1892.	
<i>Surgeon.—Major.</i> John M. Benedict, Waterbury; July 23, 1889.	Waterbury.	40	Bethel, Conn.	1st Lieut. and Asst. Surgeon 2d Regt. C. N. G., Aug. 4, 1888. Major and Surgeon, July 23, 1889.	
<i>Asst. Surgeon.—First Lieutenant.</i> Joseph H. Townsend, New Haven; Sept. 15, 1892.	New Haven,	30	New Haven, Conn.	Private Co. F, 2d Regt. C. N. G., July 1, 1891; 1st Lieut. and Asst. Surg., 2d Regt. C. N. G., Sept. 15, 1892.	

<p><i>Inspector of Rifle Practice.</i> <i>Captain.</i> George G. La Barnes, Wallingford; June 11, 1892.</p>	<p>Wallingford.</p>	<p>42 Meriden, Conn.</p>	<p>Private Co. K, 2d Regt. C. N. G., Sept. 15, 1871; Corp. Aug. 25, 1873; Sergt. Apr. 2, 1877; 1st Sergt. June 1, 1878; 1st Lieut. Dec. 26, 1878; Capt. Sept. 18, 1888; res. Nov. 7, 1891. Captain and I. R. P. 2d Regt. C. N. G., June 11, 1892.</p>	<p>Chaplain 131st Regt. Ohio Vols., May 14, 1864.</p>
<p><i>Chaplain.</i> Justin E. Twitchell, New Haven; Sept. 20, 1887. COMPANY A.—WATERBURY. <i>Captain.</i> John P. Kellogg, Waterbury; Oct. 24, 1892.</p>	<p>New Haven.</p>	<p>57 Shelburne, Mass.</p>	<p>Chaplain 5th Regt. Ohio N. G.</p>	
<p><i>First Lieutenant.</i> Edwin Hart, Waterbury; Nov. 23, 1891.</p>	<p>Waterbury.</p>	<p>23 Newark, N. J.</p>	<p>Private Co. A, 2d Regt. C. N. G., Nov. 9, 1885; Corp. Feb. 26, 1890; dis. Nov. 9, 1890. Reen. Nov. 16, 1890; Corp.; Sergt. Apr. 6, 1891; 2d Lieut. June 22, 1891; 1st Lieut. Nov. 23, 1891.</p>	
<p><i>Second Lieutenant.</i> James Geddes, Waterbury; Nov. 23, 1891.</p>	<p>Waterbury.</p>	<p>27 Waterbury, Conn.</p>	<p>Private Co. A, 2d Regt. C. N. G., June 6, 1887; Corp. Apr. 3, 1889; Sergt. Mar. 16, 1891; 2d Lieut. Nov. 23, 1891.</p>	

CONNECTICUT NATIONAL GUARD. SECOND REGIMENT (INFANTRY).—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE. In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
COMPANY B.—NEW HAVEN.					
<i>Captain.</i> John Gutt, New Haven; May 24, 1886.	New Haven.	37	Newark, N. J.	Private Co. B, 2d Regt. C. N. G., Mar. 1, 1874; Corp. Feb. 18, 1876; Sergt. May 19, 1878; 1st Sergt. July 1, 1878; dis. Mar. 13, 1879 Re-en. Mar. 13, 1879; 1st Sergt.; dis. Mar. 31, 1881. Re-en. Mar. 31, 1881; 1st Sergt.; 2d Lieut. Aug. 10, 1881; 1st Lieut. Nov. 30, 1883; Capt. May 24, 1886.	
<i>First Lieutenant.</i> Laurens Kling, New Haven; Feb. 24, 1892.	New Haven.	34	Apenrade, Denmark.	Private Co. B, 2d Regt. C. N. G., July 7, 1886; Corp. Mar. 30, 1887; Sergt. Mar. 21, 1890; 2d Lieut. April 30, 1890; 1st Lieut. Feb. 24, 1892.	
<i>Second Lieutenant.</i> Albert F. Laudensack, New Haven; February 24, 1892.	New Haven.	26	Middlefield, Conn.	Private Co. B, 2d Regt. C. N. G., Mar. 11, 1887; Corp. May 17, 1889; 1st Sergt. April 30, 1890; 2d Lieut. Feb. 24, 1892.	

COMPANY C.—NEW HAVEN.
Captain.
 Michael Creed,
 New Haven; October 22, 1889.

New Haven.	37	England.	Private Co. C, 2d Regt. C. N. G., April 1, 1874; dis. May 8, 1879. Re-en. May 8, 1879; Corp. May 8, 1879; dis. May 7, 1881. Re-en. May 9, 1881; Sergeant May 10, 1881; dis. May 9, 1883. Re-en. May 16, 1883; 1st Sergt. Sept. 1, 1884; dis. May 16, 1885. Re-en. June 4, 1885; 1st Sergt.; 2d Lieut. Feb. 4, 1886; 1st Lieut. Oct. 20, 1887; Capt. Oct. 22, 1889.
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First Lieutenant.
 James J. Kennedy,
 New Haven; October 22, 1889.

New Haven.	39	Orange, Conn.	Private Co. C, 2d Regt. C. N. G., Mar. 10, 1874; dis. May 7, 1879. Re-en. May 8, 1879; Corp. May 8, 1879; dis. May 7, 1881. Re-en. May 9, 1881; Corp.; dis. May 9, 1883. Re-en. May 11, 1883; Corp.; Q.M. Sergt.; Sergt.; dis. May 11, 1885. Re-en. May 14, 1885; Sergt.; dis. May 14, 1887. Re-en. July 23, 1887; 1st Sergt.; 2d Lieut. Oct. 20, 1887; 1st Lieut. Oct. 22, 1889.
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Second Lieutenant.
 James F. Plunkett,
 New Haven; April 29, 1890.

New Haven.	36	Cavan, Ireland.	Private Co. C, 2d Regt. C. N. G., May 15, 1882; Corp. Nov. 14, 1884; Sergt.; dis. May 15, 1887. Re-en. May 20, 1887; Sergt. May 20, 1887; dis. May 20, 1889. Re-en. June 18, 1889; Sergt.; 1st Sergt. Nov. 19, 1889; 2d Lieut. April 29, 1890.
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CONNECTICUT NATIONAL GUARD. SECOND REGIMENT (INFANTRY).—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
COMPANY D.—NEW HAVEN.					
<i>Captain.</i> Wallace E. Beacn, New Haven; Dec. 29, 1891.	New Haven.	47	Plymouth, Conn.	Private Co. H, 1st Regt. C. N. G., Nov. 11, 1878; Corp.; Sergt.; 1st Sergt.; red., dis. Nov. 19, 1881. Private Co. D, 2d Regt. C. N. G., Aug. 31, 1882; Corp. Apr. 19, 1883; Q.M.-Sergt.; 1st Sergt. 1884; dis. May 4, 1887. Re-en. Oct. 1, 1887; 1st Sergt.; 2d Lieut. March 22, 1888; 1st Lieut. Jan. 30, 1890; Capt. Dec. 29, 1891.	Private Co. D, 2d Regt. Heavy Arty. Conn. Vols., July 22, 1862; wounded June 1, 1864, Cold Harbor, Va.; Corp. Mar. 1, 1865; dis. July 7, 1865.
<i>First Lieutenant.</i> (Vacancy.)					
<i>Second Lieutenant.</i> Henry F. Morse, New Haven; June 16, 1892.	New Haven.	25	Hamden, Conn.	Private Co. D, 2d Regt. C. N. G., Nov. 7, 1889; Corp. Nov. 6, 1891; 2d Lieut. June 16, 1892.	
COMPANY E.—NEW HAVEN.					
<i>Captain.</i> Theodore H. Sucker, New Haven; January 26, 1892.	New Haven.	33	New Haven, Conn.	Private Co. E, 2d Regt. C. N. G., May 7, 1877; Corp May 1, 1879; dis. May 6, 1882. Re-en. May 7, 1882, Corp.; 2d Lieut. Mar. 5, 1883; 1st Lieut. Mar. 4, 1884; Capt. Dec. 15, 1884; res. June 16, 1891. Captain Co. E, 2d Regt. C. N. G., Jan. 26, 1892.	

First Lieutenant.
(Vacancy.)

Second Lieutenant.

Charles S. Schappa,
New Haven; April 5, 1892.

COMPANY F.—NEW HAVEN.

Captain.

Benjamin E. Brown,
New Haven; January 9, 1889.

First Lieutenant.

Charles F. McCabe,
New Haven; October 27, 1891.

Second Lieutenant.

Clarence B. Dann,
New Haven; October 27, 1891.

COMPANY G.—WATERBURY.

Captain.

Alfred J. Wolff,
Waterbury; June 21, 1886.

New Haven.	28	New Haven, Conn.	Private Co. E, 2d Regt. C. N. G., June 2, 1884; Corp. Aug. 10, 1886; Sergt. June 21, 1888; dis. June 2, 1889. Re-en. June 2, 1889, Sergt.; 1st Sergt. Sept. 30, 1890; dis. June 2, 1891. Re-en. June 2, 1891, 1st Sergt.; 2d Lieut. Apr. 5, 1892.
New Haven.	46	England.	Private Co. F, 2d Regt. C. N. G., Sept. 3, 1866; Corp. 1867; Sergt. 1868; dis. Feb. 27, 1874. Captain Co. F, 2d Regt. C. N. G., Jan. 9, 1889.
New Haven.	32	Goshen, Conn.	Private Co. F, 2d Regt. C. N. G., Jan. 28, 1884; Corp. June 10, 1885; Sergt. May 9, 1887; dis. Jan. 28, 1889. Re-en. Jan. 28, 1889; Sergt.; 1st Sergt. July 24, 1889; 2d Lieut. June 29, 1891; 1st Lieut. Oct. 27, 1891.
New Haven.	30	New Haven, Conn.	Private. Co. F, 2d Regt. C. N. G., March 9, 1887; Corp. Dec. 26, 1888; Sergt. Nov. 1, 1890; 2d Lieut. Oct. 27, 1891.
Waterbury.	36	France.	Private Co. G, 2d Regt. C. N. G., June 7, 1876; Corp. Oct. 4, 1880; dis. June 6, 1881. Re-en. July 20, 1881; Sergt. Sept. 3, 1881; dis. July 20, 1883. Re-en. Jan. 3, 1884; 1st Sergt. March 18, 1884; 2d Lieut. July 1, 1884; Captain June 21, 1886.

Musician Co. E, 27th Regt. Conn. Vol. Infy. Oct. 22, 1862; dis. July 25, 1863, tm. ex.

CONNECTICUT NATIONAL GUARD. SECOND REGIMENT (INFANTRY). — CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>First Lieutenant.</i> Daniel E. Fitzpatrick, Waterbury; November 15, 1887.	Waterbury.	31	Waterbury, Conn.	Private Co. G, 2d Regt. C. N. G., July 30, 1883; 2d Lieut. Oct. 19, 1886; 1st Lieut. Nov. 15, 1887.	
<i>Second Lieutenant.</i> Patrick Halpin, Waterbury; November 15, 1887.	Waterbury.	27	Waterbury, Conn.	Private Co. G, 2d Regt. C. N. G., Sept. 1, 1885; Q.M.-Sergt. May 3, 1887; 2d Lieut. Nov. 15, 1887.	
COMPANY H.—MIDDLETOWN. <i>Captain.</i> Wesley U. Pearne, Middletown; March 17, 1885.	Middletown.	41	New York, N. Y.	Private Co. H, 2d Regt. C. N. G., Jan. 12, 1875; dis. June 1, 1876. Restored Aug. 23, 1876; dis. March 12, 1880. Re-en. March 12, 1880; Com.-Sergt. 2d Regt, Apr. 15, 1880; 1st Lieut. Co. H, 2d Regt., Jan. 24, 1882; Capt. Mar. 17, 1885.	
<i>First Lieutenant.</i> (Vacancy.)					

<p><i>Second Lieutenant.</i> Walter R. Markham, Middletown; March 3, 1892.</p>	Middletown.	30	Hartford, Conn.	Private Co. H, 2d Regt. C. N. G., Nov. 17, 1886; Corp. Apr. 10, 1883; Sergt. May 20, 1885; dis. Nov. 17, 1885. Re-en. Nov. 17, 1885, Sergt.; 1st Sergt. May 12, 1886; dis. Nov. 17, 1887. Re-en. Nov. 17, 1887, 1st Sergt.; dis. Nov. 17, 1889. Re-en. Dec. 3, 1889, 1st Sergt.; dis. Dec. 3, 1891. Re-en. Dec. 3, 1891, 1st Sergt.; 2d Lieut. Mch. 3, 1892.
	Meriden.	31	Lewistown, Me.	Private Co. I, 2d Regt. C. N. G., May 24, 1881; Q M-Sergt. June 26, 1883; 1st Lieut. July 30, 1885; Capt. Oct. 20, 1887.
<p><i>First Lieutenant.</i> Oscar L. Bradley, Meriden; March 24, 1892.</p>	Meriden.	31	Meriden, Conn.	Private Co. I, 2d Regt. C. N. G., May 3, 1880; Corp.; dis. May 3, 1885. Re-en. June 2, 1885; Corp.; dis. June 2, 1887. Re-en. June 3, 1887; Sergt. April 4, 1888; 2d Lieut. Jan. 17, 1889; 1st Lieut. Mch. 24, 1892.
	Meriden.	28	Canton, Conn.	Private Co. I, 2d Regt. C. N. G., Mar. 18, 1887; Corp'l May 23, 1889; Sergt. July 1, 1891; dis. Mch. 18, 1892; 2d Lieut. Mch. 24, 1892.
<p><i>Second Lieutenant.</i> Delbert R. Jones, Meriden; March 24, 1892.</p>	Wallingford.	38	Litchfield, Conn.	Private Co. E, 1st Regt. C. N. G., Dec. 11, 1875; dis. Aug. 8, 1878. Private Co. K, 2d Regt. C. N. G., Sept. 20, 1883; Corp. May 20, 1885; Sergt. Dec. 30, 1886; dis. Sept. 20, 1888. Re-en. Sept. 20, 1888; 1st Sergt.; dis. Sept. 20, 1890. Re-en. Sept. 20, 1890; 1st Sergt.; 2d Lieut. June 25, 1891; Captain Nov. 17, 1891.
	Wallingford.			
COMPANY K.—WALLINGFORD.				
<p><i>Captain.</i> Daniel L. Barber, Wallingford; Nov. 17, 1891.</p>				
COMPANY I.—MERIDEN.				
<p><i>Captain.</i> Charles B. Bowen, Meriden; October 20, 1887.</p>				

CONNECTICUT NATIONAL GUARD. SECOND REGIMENT (INFANTRY).—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>First Lieutenant.</i> Robert E. Hall, Wallingford; Sept. 18, 1888.	Wallingford.	30	Wallingford, Conn.	Private Co. K, 2d Regt. C. N. G., Feb. 3, 1881; Corp. May 17, 1883; dis. Feb. 3, 1886. Re-en. Feb. 18, 1886; Sergt. Apr. 8, 1886; 1st Sergt. Dec. 31, 1886; 2d Lieut. July 28, 1887; 1st Lieut. Sept. 18, 1888.	
<i>Second Lieutenant.</i> Henry Norton, Jr., Wallingford; Nov. 17, 1891.	Wallingford.	27	Birmingham, England.	Private Co. K, 2d Regt. C. N. G., Aug. 17, 1883; Corp'l Apr. 30, 1885; Sergt. Apr. 8, 1886; 1st Sergt. July 28, 1887; dis. Aug. 17, 1888. Re-en. Aug. 17, 1888, 1st Sergt.; 2d Lieut. Sept. 18, 1888; res. June 17, 1891. 2d Lieut. Co. K, 2d Regt. C. N. G., Nov. 17, 1891.	
SECOND SIGNAL CORPS. — NEW HAVEN. <i>First Lieutenant.</i> Francis J. Duffy, New Haven; Nov. 4, 1889.	New Haven.	42	New Haven, Conn.	Private Co. C, 2d Regt. C. N. G., Nov. 1, 1870; Corp. June 30, 1873; Sergt. Sept. 1, 1876; dis. May 7, 1879. Re-en. May 8, 1879; Sergt.; dis. May 7, 1881. Re-en. May 9, 1881; Sergt.; dis. May 8, 1883. Re-en. May 11, 1883; Q.M.-Sergt. 2d Regt. C. N. G., August 20, 1883; dis. May 11, 1885. Re-en. Q.M. Sergt. 2d Regt. C. N. G., May 20, 1885; 1st Lieut. and Q. M. June 16, 1886; res. July 26, 1889. 1st Lieut. com'd'g 2d Sig. Corps, 2d Regt. C. N. G., Nov. 4, 1889.	

SECOND MACHINE-GUN PLATOON.
— NEW HAVEN.

Second Lieutenant.

William H. Sears,
New Haven; July 21, 1886.

THIRD REGT. — (INFANTRY.)

Colonel.

Augustus C. Tyler,
New London; June 22, 1892.

Lieutenant-Colonel.

John Armstrong,
Killingly; Oct. 8, 1892.

Major.

Fred A. Fox,
Norwich; Oct. 8, 1892.

Cadet at West Point, N. Y., Sept. 2, 1869, to June, 1873; 2d Lieut. 4th Regt. U.S. Cav'y, July 1, 1878.

New Haven.	35	New Haven, Conn.	Private Co. F, 2d Regt. C. N. G., Nov. 15, 1875; Corp. June 2, 1879; dis. Jan. 12, 1881. 2d Lieut. com'd'g 2d M.-G. Platoon 2d Regt. C. N. G., July 21, 1886.
New London.	41	Norwich, Conn.	
Danielson-ville.	32	England.	Private Co. F, 3d Regt. C. N. G., Dec. 15, 1885; 2d Lieut. April 1, 1886; 1st Lieut. June 3, 1886; Capt. Sept. 20, 1887. Major 3d Regt. C. N. G., July 18, 1892; Lieut.-Col. Oct. 8, 1892.
Norwich.	34	East Lyme, Conn.	Private Co. C, 3d Regt. C. N. G., Dec. 13, 1880; Corp. Feb. 18, 1882; Sergt. July 14, 1885; dis. Dec. 13, 1885. Re-en. Dec. 13, 1885; Sergt.; 2d Lieut. Jan. 18, 1887; 1st Lieut. Feb. 21, 1888; res. Nov. 30, 1889; Capt. Apr. 29, 1890. Major 3d Regt. C. N. G., Oct. 8, 1892.

CONNECTICUT NATIONAL GUARD. THIRD REGIMENT (INFANTRY).—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>Adjutant.</i> — <i>Captain.</i> Charles F. Chaney, New London; July 4, 1892.	New London.	39	New London, Conn.	Private Co. I, 3d Regt. C. N. G., Jan. 8, 1879; 1st Sergt. Jan. 8, 1879; 2d Lieut. Nov. 9, 1880; Capt. and Adj. 3d Regt. April 28, 1882; res. July 23, 1883. 2d Lieut. commanding 3d M. G. Pla- toon, 3d Regt. C. N. G., Nov. 10, 1884; res. Feb. 6, 1888. Capt. and Adjutant 3d Regt. C. N. G., July 4, 1892.	
<i>Quartermaster.</i> — <i>First Lieutenant.</i> Gilbert C. Bishop, New London; July 4, 1892.	New London.	25	New London, Conn.	Private 3d M. G. Platoon 3d Regt. C. N. G., Sept. 29, 1885; Comsy.-Sergt. 3d Regt. C. N. G., Jan. 18, 1887; 1st Lieut. and P. M. July 16, 1888. Captain and A.-D.-C. Brigade Staff C. N. G., May 12, 1890; res. June 3, 1892. First Lieut. and Quartermaster 3d Regt. C. N. G., July 4, 1892.	
<i>Paymaster.</i> — <i>First Lieutenant.</i> Beverly C. Sanders, New London; July 4, 1892.	New London.	38	Baltimore, Md.		
<i>Surgeon.</i> — <i>Major.</i> Julian LaPierre, Norwich; July 4, 1892.	Norwich.	48	Norwich, Conn.	First Lieut. and Asst. Surgeon 3d Regt. C. N. G., July 24, 1890; Major and Surgeon 3d Regt., July 4, 1892.	
<i>Assistant Surgeon.</i> — <i>First Lieut.</i> Hiram B. Thomson, New London; July 16, 1892.	New London.	28	Barrie, Ontario, Canada.		

<i>Inspector of Rifle Practice. — Capt.</i> Lucius H. Fuller, Putnam; July 4, 1892.	Putnam.	43	Tolland, Conn.	First Lieut. Co. G, 3d Regt. C. N. G., Dec. 11, 1890; Capt. and I. R. P. 3d Regt., July 4, 1892.
	<i>Chaplain.</i> Nicholas T. Allen, Groton; November 1, 1886.	Groton.	72 N. Kingston, R. I.	
COMPANY A. — NEW LONDON. <i>Captain.</i> Michael J. Roach, New London; June 8, 1887.	New London.	41	Norwich, Conn.	Private Co. D, 3d Regt. C. N. G., Aug. 28, 1871; Corp. July 9, 1872; Sergt. May 17, 1876; dis. Dec. 21, 1876. Re-en. May 12, 1878; Sergt.; 1st Sergt.; 2d Lieut. April 10, 1882; Captain June 8, 1887.
	<i>First Lieutenant.</i> Henry S. Dorsey, New London; January 28, 1891.	New London.	27 New London, Conn.	Private Co. A, 3d Regt. C. N. G., Nov. 8, 1886; trans. to 3d Sig. Corps, 3d Regt. C. N. G., May 12, 1890; 2d Lieut. Co. A, 3d Regt. C. N. G., July 23, 1890; 1st Lieut. Jan. 28, 1891.
<i>Second Lieutenant.</i> Jeremiah Dillon, New London; January 28, 1891.	New London.	28	New London, Conn.	Private Co. A, 3d Regt. C. N. G., Nov. 30, 1886; Corp. July 19, 1887; Sergt. Feb. 5, 1890; 2d Lieut. Jan. 28, 1891.
	COMPANY B. — PAWCATUCK. <i>Captain.</i> Daniel Kelleher, Stonington; July 28, 1886.	Westerly, R. I.	41 Ireland.	Private Co. B, 3d Regt. C. N. G., Mar. 4, 1875; Sergt.; 2d Lieut. March 23, 1876; res. Aug. 9, 1876. Private Co. B, 3d Regt. C. N. G., Dec. 28, 1877; Sergt.; 2d Lieut. Aug. 18, 1879; 1st Lieut. May 16, 1882; Capt. July 28, 1886.

Chaplain 26th Regt. Conn.
Vols., Sept. 26, 1862;
dis. April 2, 1863.

CONNECTICUT NATIONAL GUARD. THIRD REGIMENT (INFANTRY). — CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>First Lieutenant.</i> Cornelius Bransfield, Stonington; July 28, 1886.	Westerly, R. I.	36	Stonington, Conn.	Private Co. B, 3d Regt. C. N. G., April 4, 1878; Corp.; 2d Lieut. May 16, 1882; 1st Lieut. July 28, 1886.	
<i>Second Lieutenant.</i> Walter Fitzgerald, Stonington; May 31, 1889.	Westerly, R. I.	32	Stonington, Conn.	Private Co. B, 3d Regt. C. N. G., June 7, 1883; Corp. March 10, 1887; dis. June 7, 1888. Re-en. June 7, 1888; Corp.; Sergt. Feb. 5, 1889; 2d Lieut. May 31, 1889.	
COMPANY C. — NORWICH.					
<i>Captain.</i> Arthur S. Howard, Norwich; October 27, 1892.	Norwich.	34	Union, Conn.	Private Co. C, 3d Regt. C. N. G., Nov. 8, 1883; Corp. Nov. 24, 1886; Sergt. Aug. 2, 1887; dis. Nov. 8, 1888. Re- en. Feb. 5, 1889; Corp. Aug. 9, 1889; 1st Lieut. Dec. 10, 1889; Capt. Oct. 27, 1892.	
<i>First Lieutenant.</i> James L. Kingsley, Norwich; October 27, 1892.	Norwich.	35	Lisbon, Conn.	Private Co. C, 3d Regt. C. N. G., Feb. 1, 1881; Corp. Sept. 3, 1884; dis. Feb. 1, 1886. Re-en. Mar. 8, 1887; Corp. May 1, 1888; Sergt. Dec. 1, 1888; dis. Mar. 8, 1889. Re-en. Mar. 8, 1889, Sergt.; dis. Mar. 8, 1891. Re-en. Mar. 8, 1891, Sergt.; 2d Lieut. Mar. 15, 1892; 1st Lieut. Oct. 27, 1892.	
<i>Second Lieutenant.</i> John A. Hagberg, Norwich; October 27, 1892.	Norwich.	24	Vestervik, Sweden.	Private Co. C, 3d Regt. C. N. G., Mar. 26, 1889; Corp. Feb. 17, 1891; Sergt. July 11, 1892; 2d Lieut. Oct. 27, 1892.	

COMPANY D. — NEW LONDON.

Captain.

Thomas O. Thompson,
New London; Feb. 9, 1891.

First Lieutenant.

David Conner,
New London; March 4, 1891.

Second Lieutenant.

Frank W. Rogers, Jr.,
New London; Dec. 1, 1891.

COMPANY E. — WILLIMANTIC.

Captain.

Martin Heffernan,
Willimantic; July 14, 1892.

First Lieutenant.

John F. McCarthy,
Willimantic; July 14, 1892.

New London.	29	New York, N. Y.	Private Co. I, 3d Regt. C. N. G., May 17, 1881; Corp. May 23, 1882; 1st Lieut. and Signal Officer 3d Regt. July 23, 1883; Capt. and I. R. P., Mar. 12, 1885; res. July 19, 1886. Enlisted Co. F, 7th Regt. N. G. S. N. Y., April 30, 1886; dropped Oct. 7, 1890. 1st Lieut. Co. D, 3d Regt. C. N. G., Dec. 1, 1890; Capt. Feb. 9, 1891.
New London.	31	Brooklyn, N. Y.	Private Co. D, 3d Regt. C. N. G., Nov. 22, 1880; Corp. Aug. 22, 1881; Sergt. May 8, 1882; Sergt.-Major 3d Regt. C. N. G., July 10, 1883; dis. Nov. 22, 1885. Re-en. Sergt.-Major Nov. 23, 1885; dis. Nov. 23, 1887. Re-en. Sergt.-Major Nov. 23, 1887; dis. Nov. 23, 1889. Re-en. Sergt.-Major Nov. 23, 1889; 1st Lieut. Co. D, 3d Regt. C. N. G., March 4, 1891.
New London.	31	New London, Conn.	Private Co. D, 3d Regt. C. N. G., Feb. 11, 1889; Corp. May 1, 1890; Sergt.; 2d Lieut. Dec. 1, 1891.
Willimantic.	27	Windham, Conn.	Private Co. E, 3d Regt. C. N. G., July 24, 1884; Corp. Apr. 15, 1886; Sergt. Feb. 12, 1887; 1st Sergt. Aug. 1, 1888; 2d Lieut. April 22, 1889; 1st Lieut. June 11, 1889; Capt. July 14, 1892.
Willimantic.	24	Windham, Conn.	Private Co. E, 3d Regt. C. N. G., May 23, 1889; Corp. Aug. 1, 1890; 1st Sergt. Jan. 1, 1892; 2d Lieut. Feb. 18, 1892; 1st Lieut. July 14, 1892.

CONNECTICUT NATIONAL GUARD, THIRD REGIMENT (INFANTRY).—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>Second Lieutenant.</i> Charles Grady, Willimantic; July 14, 1892.	Willimantic.	26	Windham, Conn.	Private Co. E, 3d Regt. C. N. G., July 23, 1887; Corp. Feb. 14, 1891; Sergt. Aug. 1, 1891; dis.— 2d Lieut. Co. E, 3d Regt., July 14, 1892.	
COMPANY F.—DANIELSON- VILLE. <i>Captain.</i> Henry E. Burton, Danielsonville; Aug. 4, 1892.	Danielson- ville.	29	St. Albans, Vt.	Private Co. F, 3d Regt. C. N. G., April 8, 1886; Corp. Apr. 1, 1887; 2d Lieut. Nov. 15, 1887; 1st Lieut. Oct. 13, 1891; Capt. Aug. 4, 1892.	
<i>First Lieutenant.</i> John McManus, Danielsonville; Aug. 4, 1892.	Danielson- ville.	26	Ireland.	Private Co. F, 3d Regt. C. N. G., Jan. 20, 1887; Corp. Apr. 1, 1887; Sergt. Mch. 26, 1889; Q.-M. Sergt. Jan. 1, 1890; 1st Sergt. June 1, 1890; dis. Jan. 20, 1892. Re-en. Jan. 20, 1892, 1st Sergt.; 1st Lieut. Aug. 4, 1892.	
<i>Second Lieutenant.</i> (Vacancy.)					

COMPANY G.—PUTNAM. <i>Captain.</i> Henry J. Thayer, Putnam; December 11, 1890.	Putnam.	38	Woonsocket, R. I.	Private Co. A, 4th Battn. Inf. 2d Brig. R. I. M., May 27, 1875; Sergt.; 1st Sergt.; 2d Lieut. Nov. 26, 1877; dis. May 1, 1879. Private Co. G, 3d Regt. C. N. G., Aug. 15, 1884; 1st Sergt. May 15, 1885; 2d Lieut. July 27, 1888; 1st Lieut. Feb 6, 1890; Capt. Dec. 11, 1890.
<i>First Lieutenant.</i> Arthur D. McIntyre, Putnam; July 16, 1892.	Putnam.	30	Springfield, Mass.	Private Co. G, 3d Regt. C. N. G., May 20, 1887; Corp. Apr. 10, 1890; dis. May 20, 1892. Re-en May 20, 1892; Sergt. July 12, 1892; 1st Lieut. July 16, 1892.
<i>Second Lieutenant.</i> Clinton A. Winslow, Putnam; June 4, 1891.	Putnam.	44	Putnam, Conn.	Private Co. G, 3d Regt. C. N. G., Jan. 11, 1872; Corp.; 2d Lieut. Aug. 22, 1876; 1st Lieut. Aug. 30, 1877; Capt. April 3, 1878; res. May 2, 1879. 2d Lieut. Co. G, 3d Regt. C. N. G., Mar. 18, 1881; res. Aug. 17, 1881. 2d Lieut. Co. G, 3d Regt. C. N. G., Apr. 5, 1883; Capt. Nov. 15, 1883; res. Jan. 29, 1890. 2d Lieut. June 4, 1891.
COMPANY I.—NEW LONDON. <i>Captain.</i> Henry L. Starr, New London; Oct. 18, 1892.	New London.	26	Groton, Conn.	Private 3d M.-G. Platoon, 3d Regt. C. N. G., Sept. 17, 1888; dis. Oct. 31, 1890. 2d Lieut. comd'g 3d M.-G. Pla- toon, Nov. 12, 1890; Capt. Co. I, 3d Regt. Oct. 18, 1892.

CONNECTICUT NATIONAL GUARD, THIRD REGIMENT (INFANTRY).—CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>First Lieutenant.</i> Charles A. Miner, New London; Nov. 8, 1892.	New London.	34	Mystic, Conn.	Private Co. I, 3d Regt. C. N. G., Jan. 8, 1879; Corp. Aug. 26, 1879; Sergt. Mar. 3, 1881; dis. July 31, 1883. Re-en. Mar. 2, 1886; Corp. Aug. 27, 1886; Sergt. Dec. 23, 1886; 1st Sergt. June 9, 1888; 2d Lieut. Jan. 27, 1891; 1st Lieut. Nov. 8, 1892.	
<i>Second Lieutenant.</i> (Vacancy.)					
THIRD SIGNAL CORPS.—NEW LONDON. <i>First Lieutenant.</i> Albert A. Beach, New London; March 25, 1892.	New London.	26	New London, Conn.	Private 3d Signal Corps, 3d Regt. C. N. G., Oct. 7, 1889; Sergt. Jan. 11, 1891; 1st Lieut. March 25, 1892.	
THIRD MACHINE-GUN PLATOON. —NEW LONDON. <i>Second Lieutenant.</i> Ira J. Brown, New London, Nov. 10, 1892.	New London.	31	Hopkinton, R. I.	Private 3d M.-G. Platoon 3d Regt. C. N. G., Sept. 17, 1888; Corp. Feb. 21, 1889; Sergt. Mar. 5, 1891; 2d Lieut. comd'g 3d M.-G. Platoon 3d Regt., Nov. 10, 1892.	
FOURTH REG'T.—(INFANTRY) <i>Colonel.</i> Russell Frost, Norwalk; January 8, 1892.	So. Norwalk.	42	Delhi, N. Y.	First Lieut. Co. D, 4th Regt. C. N. G., Jan. 12, 1886; Capt. Feb. 17, 1886. Colonel 4th Regt. Jan. 8, 1892.	

<p><i>Lieutenant-Colonel.</i> James C. Crowe, Norwalk; March 22, 1890.</p>	So. Norwalk.	57	Norwalk, Conn.	Private Co. A, 8th Regt. C. M., Jan. 1, 1854; 2d Corp. Dec. 30, 1856; 1st Corp. May 10, 1859; dis. 1861. Private Co. D, 8th Regt. C. M., Jan. 1862; 2d Sergt. Jan. 31, 1862; 1st Sergt. Feb. 22, 1864; 2d Lieut. April 24, 1865; 1st Lieut. May 21, 1866 (changed to Co. D, 4th Regt. C. N. G., Aug. 1, 1871); Capt. July 19, 1871; Maj. 4th Regt. Aug. 18, 1880; Lieut.-Colonel Mar. 22, 1890.
	Bridgeport.	43	Ireland.	Private Co. E, 8th Regt. C. N. G., Aug. 11, 1868; Corp.; Serg., 1869; 2d Lieut. Jan. 20, 1871 (changed to Co. E, 4th Regt., Aug. 1, 1871); 1st Lieut. May 30, 1874; res. Feb. 11, 1879. 1st Lieut. Co. E, 4th Regt. C. N. G., Feb. 24, 1879; Capt. Dec. 31, 1880; Major 4th Regt. April 5, 1892.
	So. Norwalk.	33	Norwalk, Conn.	1st Lieut. and Quartermaster 4th Regt. C. N. G., Feb. 4, 1892; Capt. and Adjt. 4th Regt., June 4, 1892.
	Stamford.	28	Mystic, Conn.	Private Co. C, 4th Regt. C. N. G., Nov. 1, 1889; Corp. Aug. 8, 1891; Com's-y. Sergt. 4th Regt., Apr. 30, 1892; 1st Lieut. and Quartermaster 4th Regt., July 19, 1892.
	So. Norwalk.	29	Norwalk, Conn.	
<p><i>Major.</i> James Sheridan, Bridgeport; April 5, 1892.</p>				
<p><i>Adjutant. — Captain.</i> James K. Crofut, Norwalk; June 4, 1892.</p>				
<p><i>Quartermaster. — First Lieutenant.</i> Everett Noyes, Stamford; July 19, 1892.</p>				
<p><i>Paymaster. — First Lieutenant.</i> Edmund E. Crowe, Norwalk; May 22, 1890.</p>				

CONNECTICUT NATIONAL GUARD, FOURTH REGIMENT (INFANTRY). — CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>Surgeon. — Major.</i> Charles C. Godfrey, Bridgeport; May 8, 1890.	Bridgeport.	38	Saybrook, Conn.	Private Co. C, 4th Regt. C. N. G., Sept. 11, 1884; dis. by disbandment of Co. Dec. 19, 1884. Major and Surgeon 4th Regt., May 8, 1890.	
<i>Assistant Surgeon. — First Lieut.</i> Wilbur S. Watson, Danbury; July 24, 1890.	Danbury.	40	N. Hartford, Conn.		
<i>Inspector of Rifle Practice. — Capt.</i> William H. Holly, Stamford; July 19, 1892.	Stamford.	34	Savannah, Mo.	Private Co. C, 4th Regt. C. N. G., Nov. 19, 1888; Capt. and I. K. P. 4th Regt. July 19, 1892.	
<i>Chaplain.</i> Beverly E. Warner, Bridgeport; July 3, 1889.	Bridgeport.	37	Jersey City, N. J.		
<i>COMPANY B. — BRIDGEPORT.</i> <i>Captain.</i> Merritt F. White, Bridgeport; Aug. 9, 1892.	Bridgeport.	36	Barre, Mass.	Private Co. B, 4th Regt. C. N. G., Feb. 18, 1884; Corp. Nov. 17, 1885; Sergt. April 17, 1888; dis. Feb. 18, 1889. Re-en. Feb. 18, 1889; Sergt.; 2d Lieut. June 3, 1890; 1st Lieut. Jan. 12, 1892; Capt. Aug. 9, 1892.	

<i>First Lieutenant.</i> George D. Shelton, Bridgeport; August 9, 1892.	Bridgeport.	30	Bridgeport, Conn.	Private Co. B, 4th Regt. C. N. G., Nov. 20, 1883; Corp. Aug. 10, 1886; dis. Nov. 21, 1888. Re-en. Nov. 21, 1888; Corp.; Sergt. Feb. 12, 1889; dis. Nov. 21, 1890. Re-en. Dec. 1, 1890; Sergt.; 1st Sergt.; 2d Lieut. Jan. 12, 1892; 1st Lieut. Aug. 9, 1892.
<i>Second Lieutenant.</i> William Houlihan, Bridgeport; August 9, 1892.	Bridgeport.	28	Canada.	Private Co. B, 4th Regt. C. N. G., June 22, 1886; Corp. May 14, 1889; Sergt. July 15, 1890; dis. June 22, 1891. Re-en. June 30, 1891; Sergt.; 1st Sergt. April 12, 1892; 2d Lieut. Aug. 9, 1892.
COMPANY C. — STAMFORD. <i>Captain.</i> Charles W. Hendrie, Stamford; July 20, 1891.	Stamford,	30	Greenwich, Conn.	Private Co. C, 4th Regt. C. N. G., Apr. 29, 1886; Q.-M. Sergt. Dec. 27, 1889; 2d Lieut. June 27, 1890; Capt. July 20, 1891.
<i>First Lieutenant.</i> (Vacancy).				
<i>Second Lieutenant.</i> Gilbert L. Fitch, Darien; August 24, 1891.	Noroton,	23	Corfu, N. Y.	Private Co. C, 4th Regt. C. N. G., Nov. 19, 1888; Corp. Aug. 3, 1891; 2d Lieut. Aug. 24, 1891.
COMPANY D. — SO. NORWALK. <i>Captain.</i> Addison A. Betts, Norwalk; October 24, 1892.	Norwalk,	52	Wilton, Conn.	Private Co. D, 4th Regt. C. N. G., Aug. 2, 1872; 2d Lieut. July 17, 1874; 1st Lieut. May 14, 1875. Capt. Co. F, May 4, 1880; res. July 24, 1890. Capt. Co. D, 4th Regt. C. N. G., Oct. 24, 1892.

CONNECTICUT NATIONAL GUARD, FOURTH REGIMENT (INFANTRY). — CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
				In National Guard or Militia of this or any other State.	In U. S. Army or Navy.
<i>First Lieutenant.</i> Robert J. Doyle, Norwalk; Sept. 6, 1892.	So. Norwalk.	24	Australia.	Private Co. D, 4th Regt. C. N. G., May 1, 1887; Corp. Jan. 19, 1891; 2d Lieut. Feb. 19, 1892; 1st Lieut. Sept. 6, 1892.	
<i>Second Lieutenant.</i> George A. Hoyt, Norwalk; Sept. 6, 1892.	So. Norwalk.	23	Norwalk, Conn.	Private Co. D, 4th Regt. C. N. G., Dec. 31, 1887; 2d Lieut. Sept. 6, 1892.	
COMPANY E. — BRIDGEPORT. <i>Captain.</i> John J. Glennon, Bridgeport; April 27, 1892.	Bridgeport.	41	Redding, Conn.	Private Co. E, 4th Regt. C. N. G., Feb. 7, 1876; Corp. Aug. 21, 1877; Sergt. Aug. 19, 1880; dis. March 17, 1881. Re-en. March 21, 1881; Sergt.; 2d Lieut. Mar. 25, 1881; 1st Lieut. May 3, 1888; Capt. April 27, 1892.	
<i>First Lieutenant.</i> John O'Niel, Bridgeport; April 27, 1892.	Bridgeport.	36	Clinton, Mass.	Private Co. E, 4th Regt. C. N. G., Apr. 2, 1880; Corp. Feb. 25, 1882; dis. Apr. 2, 1885. Re-en. April 6, 1885; Corp.; Sergt. Sept., 1885; dis. Apr. 6, 1887. Re-en. May 9, 1887; Sergt.; 2d Lieut. July 16, 1888; 1st Lieut. Apr. 27, 1892.	
<i>Second Lieutenant.</i> James J. Hurley, Bridgeport; Nov. 14, 1892.	Bridgeport.	35	New Haven, Conn.		

COMPANY F.—NORWALK. <i>Captain.</i> Reuben M. Rose, Norwalk; November 4, 1890.	Norwalk.	44	Essex, Ohio.		Private Co. H, 61st Ohio Vols. Inf., Feb. 17, 1862; dis. July 24, 1865.
<i>First Lieutenant.</i> Albert J. Wilcoxson, Norwalk; July 26, 1892.	Norwalk.	31	Bridgeport, Conn.	Private Co. F, 4th Regt. C. N. G., June 9, 1883; Corp. May 16, 1885; Sergt. Feb. 27, 1886; dis. June 9, 1888. Re- en. June 9, 1888; 1st Sergt. April 2, 1890; dis. June 9, 1890. Re-en. June 9, 1890; 1st Sergt.; 2d Lieut. Aug. 11, 1891; 1st Lieut. July 26, 1892.	
<i>Second Lieutenant.</i> John W. Latson, Jr., Norwalk; July 26, 1892.	Norwalk.	28	Yonkers, N. Y.	Private Co. F, 4th Regt. C. N. G., June 26, 1885; Corp. Oct. 18, 1887; dis. June 26, 1890. Re-en. Aug. 1, 1890; Corp.; Sergt. Oct. 10, 1890; 1st Sergt. Oct. 31, 1891; 2d Lieut. July 26, 1892.	
COMPANY G.—DANBURY. <i>Captain.</i> Carroll D. Ryder, Danbury; March 31, 1891.	Danbury.	26	Bethel, Conn.	Private Co. G, 4th Regt. C. N. G., Aug. 9, 1887; 1st Sergt. Aug. 10, 1887; 2d Lieut. May 15, 1888; 1st Lieut. May 20, 1890; Capt. Mar. 31, 1891.	
<i>First Lieutenant.</i> Fred J. Breckbill, Danbury; February 16, 1892.	Danbury.	25	Shelby, Ohio.	Private Co. G, 4th Regt. C. N. G., Nov. 24, 1891; 1st Lieut. Feb. 16, 1892.	
<i>Second Lieutenant.</i> Emil J. Walter, Danbury; February 16, 1892.	Danbury.	24	Philadelphia, Pa.	Private Co. G, 4th Regt. C. N. G., June 22, 1886; Corp. June 4, 1888; Sergt. May 25, 1890; dis. June 22, 1891. Re- en. June 22, 1891; 1st Sergt. June 25, 1891; 2d Lieut. Feb. 16, 1892.	

ADJT. GEN. 16

CONNECTICUT NATIONAL GUARD, FOURTH REGIMENT (INFANTRY). — CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	In National Guard or Militia of this or any other State.	SERVICE. In U. S. Army or Navy.
COMPANY I.—WEST WINSTED.					
<i>Captain.</i> Charles B. Moore, Winchester; March 7, 1892.	Winsted.	30	Tolland, Mass.	Private Co. I, 4th Regt. C. N. G., Apr. 9, 1888; Corp. Mar. 4, 1889; Sergt. Feb. 1, 1890; Q.-M. Sergt. Jan. 4, 1892; Capt. Mar. 7, 1892.	
<i>First Lieutenant.</i> Charles N. Parsons, Winchester; Sept. 29, 1890.	Winsted.	24	Winsted, Conn.	Private Co. I, 4th Regt. C. N. G., Mar. 21, 1887; Corp. May 1, 1890; 1st Lieut. Sept. 29, 1890.	
<i>Second Lieutenant.</i> Henry S. Terrell, Winchester; Nov. 15, 1892.	Winsted.	28	Colebrook, Conn.	Private Co. I, 4th Regt. C. N. G., Apr. 10, 1884; Corp. July 16, 1885; Sergt. Jan. 17, 1887; 1st Sergt.; 2d Lieut. Dec. 31, 1888; 1st Lieut. Apr. 8, 1889; Capt. Nov. 18, 1889. Res. Mar. 1, 1892; 2d Lieut. Co. I, 4th Regt. C. N. G., Nov. 15, 1892.	
COMPANY K.—BRIDGEPORT.					
<i>Captain.</i> Charles W. Burpee, Bridgeport; May 21, 1892.	Bridgeport.	33	Vernon, Conn.	Private Co. C, 1st Regt. C. N. G., Feb. 4, 1878; dis. Nov. 18, 1879. Private Co. A, 2d Regt. C. N. G., Dec. 1, 1884; dis. June 30, 1885. Private Co. A, 2d Regt. C. N. G., April 2, 1888; Corp. April 14, 1889; 2d Lieut. Feb. 26, 1890; 1st Lieut. June 22, 1891; res. Nov. 7, 1891. Capt. and Adjt. 4th Regt. C. N. G., Jan. 22, 1892. Capt. Co. K, 4th Regt., May 21, 1892.	

<p><i>First Lieutenant.</i> Samuel C. Parker, Bridgeport; May 26, 1892.</p>	<p>Bridgeport.</p>	<p>30 Plainville, Conn.</p>	<p>Private Co. K, 1st Regt. C. N. G., Nov. 14, 1888; dis. Feb. 15, 1892. Private Co. K, 4th Regt. C. N. G., May 26, 1891; 1st Lieut. May 26, 1892.</p>
<p><i>Second Lieutenant.</i> Frederick H. Masterson, Bridgeport; May 26, 1892.</p>	<p>Bridgeport.</p>	<p>22 Bridgeport, Conn.</p>	<p>Private Co. K, 4th Regt. C. N. G., June 18, 1889; Corp. May 21, 1890; 2d Lieut. May 26, 1892.</p>
<p>FOURTH SIGNAL CORPS. — BRIDGEPORT. <i>First Lieutenant.</i> Owen Burns, Bridgeport; May 11, 1891.</p>	<p>Bridgeport.</p>	<p>38 Bridgeport, Conn.</p>	<p>Private Co. E, 4th Regt. C. N. G., Mar. 13, 1880; dis. Mar. 12, 1885. Re-en. Aug. 4, 1887; dis. Aug. 4, 1889. Re-en. 4th Signal Corps, 4th Regt. C. N. G., Oct. 30, 1889; Sergt. April 30, 1890; 1st Lieut. comd'g 4th Signal Corps, 4th Regt. C. N. G., May 11, 1891.</p>
<p>FOURTH MACHINE-GUN PLATOON. — BRIDGEPORT. <i>Second Lieutenant.</i> George P. Rand, Bridgeport; October 26, 1888.</p>	<p>Bridgeport.</p>	<p>38 Boston, Mass.</p>	<p>Private Co. B, 4th Regt. C. N. G., Dec. 10, 1872; Corp. Jan. 29, 1874; Sergt. Dec. 19, 1876; dis. Feb. 6, 1878. Re-en. June 3, 1879; Corp. Aug. 17, 1880; dis. June 2, 1881. Re-en. July 5, 1881; Corp. July 12, 1881; Sergt. Jan. 31, 1882; dis. Oct. 1, 1883. Re-en. Oct. 1, 1883; Sergt. Nov. 13, 1883; 1st Sergt. Nov. 30, 1884; dis. Oct. 1, 1885. 2d Lieut. comd'g 4th M.-G. Platoon, 4th Regt. C. N. G., Oct. 26, 1888.</p>

CONNECTICUT NATIONAL GUARD, SEPARATE COMPANIES (INFANTRY, COLORED). — CONTINUED.

ORGANIZATION, NAME, RESIDENCE, RANK, AND DATE OF RANK.	P. O. ADDRESS.	AGE.	BIRTHPLACE.	SERVICE.	
FIRST SEPARATE COM- PANY. — NEW HAVEN.					
<i>Captain.</i> Daniel S. Lathrop, Birmingham; April 28, 1884.	Birmingham.	46	New Haven, Conn.	Private Co. A, 5th Battalion C. N. G., Jan. 4, 1881; Capt. April 28, 1884.	Private Co. A, 29th Regt. Conn. Vols. (col'd), Nov. 18, 1863; Sergt. Dec., 1863; 1st Sergt. Jan., 1864; Regimental Q.-M. Sergt. March 20, 1864; dis. Nov. 25, 1865.
<i>First Lieutenant.</i> Daniel Tilghman, New Haven; May 1, 1885.	New Haven.	43	Boston, Mass.	Private Co. A, Ind'p't Bat'l'n C. N. G., May 14, 1879; Corp. May 17, 1879 (changed to 5th Bat'l'n Feb. 26, 1880); Sergt. Nov. 22, 1881; 2d Lieut April 28, 1884; 1st Lieut. May 1, 1885.	
<i>Second Lieutenant.</i> Lewis P. Wood, New Haven; June 14, 1889.	New Haven.	29	Norwalk, Conn.	Private Co. A, 5th Battalion C. N. G., Aug. 5, 1884; Corp. May 16, 1888; Sergt. Dec. 29, 1888; 2d Lieut. June 14, 1889.	
SECOND SEPARATE COM- PANY. — HARTFORD.					
<i>Captain.</i> Everett W. Freeman, Hartford; August 11, 1890.	Hartford.	30	Hartford, Conn.	Private Co. B, 5th Battalion C. N. G., April 11, 1887; 1st Sergt. Feb. 22, 1888; 1st Lieut. Mch. 4, 1889 (changed to Second Separate Company C. N. G., Mar. 1, 1890); Capt. Aug. 11, 1890.	

First Lieutenant.

Edwin B. Freeman,
Hartford; March 11, 1892.

Second Lieutenant.

Arthur B. Mitchell,
Hartford; July 22, 1892.

JUDGE ADVOCATES.

FIRST REGIMENTAL DISTRICT.
Major Lyman S. Burr,
New Britain; June 15, 1891.

SECOND REGIMENTAL DISTRICT.
Major H. Lynde Harrison,
New Haven; June 18, 1872.

THIRD REGIMENTAL DISTRICT.
Major Samuel Park,
New London; March 1, 1892.

FOURTH REGIMENTAL DISTRICT.
Major Samuel Fessenden,
Stamford; August 30, 1872.

Hartford.	26	Hartford, Conn.	Private Co. B, 5th Battalion C. N. G., Mar. 20, 1889; Corp. June 19, 1889 (changed to Second Separate Com- pany, C. N. G., Mar. 1, 1890); Sergt. June 11, 1890; 1st Sergt. July 1, 1891; 1st Lieut. Mar. 11, 1892.
Hartford.	29	Hartford, Conn.	Private Second Separate Company, C. N. G., May 18, 1892; 2d Lieut. July 22, 1892.
New Britain.	39	Torrington, Conn.	Private Co. I, 1st Regt., C. N. G., Aug. 9, 1890; Capt. Aug. 15, 1890. Major and Judge Advocate 1st Regt'l District, June 15, 1891.
New Haven.	54	New Haven, Conn.	First Lieut. and Paymaster 2d Regt. C. N. G., Aug. 18, 1865; Capt. and A. D. C. 2d Brig. C. N. G., July 2, 1866; dis. Aug. 1, 1871. Major and Judge Advocate 2d Regt'l District, June 18, 1872.
New London.	39	Groton, Conn.	
Stamford.	45	Rockland, Me.	Regimental Quartermaster 27th Regt. Conn. Vols. Oct. 22, 1862; res. Jan. 20, 1863.

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MILITARY ENROLLMENT, 1891.

HARTFORD COUNTY.

TOWNS.	Total Number Enrolled.	Minors, Mem- bers of Active Militia, and other Exempts.	Liable to Military Duty in case of War or Invasion.	Number Liable to Commutation Tax.
Hartford, . . .	7,606	2,214	7,440	5,392
Avon, . . .	80	....	80	80
Berlin, . . .	290	37	282	253
Bloomfield, . . .	170	22	168	148
Bristol, . . .	1,154	275	1,130	879
Burlington, . . .	176	28	164	148
Canton, . . .	301	64	286	237
East Granby, . . .	55	....	55	55
East Hartford, . . .	494	119	486	375
East Windsor, . . .	273	19	273	254
Enfield, . . .	753	151	747	602
Farmington, . . .	452	125	442	327
Glastonbury, . . .	377	60	357	317
Granby, . . .	227	32	221	195
Hartland, . . .	76	4	76	72
Manchester, . . .	894	187	872	707
Marlborough, . . .	26	6	26	20
New Britain, . . .	2,353	726	2,300	1,627
Newington, . . .	101	36	92	65
Plainville, . . .	311	95	292	216
Rocky Hill, . . .	109	15	103	94
Simsbury, . . .	199	25	193	174
Southington, . . .	790	311	750	479
South Windsor, . . .	270	48	265	222
Suffield, . . .	268	29	265	239
West Hartford, . . .	150	33	150	117
Wethersfield, . . .	210	84	203	126
Windsor, . . .	368	107	362	261
Windsor Locks, . . .	457	140	439	317
Total, . . .	18,990	4,992	18,519	13,998

TOLLAND COUNTY.

TOWNS.	Total Number Enrolled.	Minors, Mem- bers of Active Militia, and other Exempts.	Liable to Military Duty in case of War or Invasion.	Number Liable to Commutation Tax.
Tolland, . .	100	19	93	81
Andover, . .	59	12	55	47
Bolton, . . .	58	18	54	40
Coventry, . .	232	43	220	189
Columbia, . .	90	21	83	69
Ellington, . .	149	38	142	111
Hebron, . . .	91	5	91	86
Mansfield, . .	203	33	201	170
Somers, . . .	168	27	162	141
Stafford, . . .	416	44	416	372
Union,	51	9	49	42
Vernon, . . .	1,098	306	1,066	792
Willington, . .	100	17	94	83
Total,	2,815	592	2,726	2,223

NEW HAVEN COUNTY.

TOWNS.	Total Number Enrolled.	Minors, Mem- bers of Active Militia, and other Exempts.	Liabie to Military Duty in case of War or Invasion.	Number Liabie to Commutation Tax.
New Haven, . .	11,473	2,209	11,234	9,264
Ansonia, . . .	1,428	392	1,373	1,036
Branford, . . .	493	131	475	362
Bethany, . . .	58	9	53	49
Beacon Falls, .	62	12	58	50
Cheshire, . . .	236	58	226	178
Derby,	754	241	680	513
East Haven, . .	68	12	66	56
Guilford, . . .	329	153	308	176
Hamden,	429	63	415	366
Madison,	151	31	142	120
Meriden,	2,902	601	2,874	2,301
Middlebury, . .	74	10	72	64
Milford,	414	90	402	324
Naugatuck, . . .	869	174	858	695
North Branford, .	116	26	106	90
North Haven, . .	240	37	226	203
Orange,	534	155	533	379
Oxford,	99	17	98	82
Prospect,	42	7	39	35
Seymour,	342	90	339	252
Southbury, . . .	128	24	121	104
Wallingford, . .	1,147	305	1,128	842
Waterbury, . . .	3,719	1,033	3,688	2,686
Woodbridge, . . .	124	23	121	101
Wolcott,	55	8	55	47
Total,	26,286	5,911	25,690	20,375

MIDDLESEX COUNTY.

TOWNS.	Total Number Enrolled.	Minors, Mem- bers of Active Militia, and other Exempts.	Liable to Military Duty in case of War or Invasion.	Number Liable to Commutation Tax.
Middletown, . .	1,452	449	1,422	1,003
Chatham, . .	214	47	213	167
Chester, . .	152	19	150	133
Clinton, . .	194	67	177	127
Cromwell, . .	280	66	275	214
Durham, . .	128	12	127	116
East Haddam, . .	382	51	375	331
Essex, . .	375	85	359	290
Haddam, . .	245	33	242	212
Killingworth, . .	73	11	70	62
Middlefield, . .	138	31	138	107
Old Saybrook, . .	137	37	125	100
Portland, . .	275	74	273	201
Saybrook, . .	183	32	176	151
Westbrook, . .	93	16	88	77
Total, . .	4,321	1,030	4,210	3,291

NEW LONDON COUNTY.

TOWNS.	Total Number Enrolled.	Minors, Mem- bers of Active Militia, and other Exempts.	Liable to Military Duty in case of War or Invasion.	Number Liable to Commutation Tax.
New London, .	2,630	1,302	2,152	1,328
Bozrah, . .	118	24	113	94
Colchester, . .	435	121	416	314
East Lyme, . .	182	31	182	151
Franklin, . .	61	17	56	44
Griswold, . .	337	85	303	252
Groton, . .	739	298	598	441
Lebanon, . .	210	43	192	167
Ledyard, . .	177	34	170	143
Lisbon, . . .	51	9	46	42
Lyme, . . .	109	19	107	90
Montville, . .	339	61	336	278
Norwich, . .	3,307	1,352	3,207	1,955
North Stonington, .	229	72	193	157
Old Lyme, . .	121	15	121	106
Preston, . .	422	136	415	286
Salem, . . .	68	14	63	54
Stonington, . .	921	355	906	566
Sprague, . .	124	43	120	81
Voluntown, . .	85	23	75	62
Waterford, . .	287	50	287	237
Total, . . .	10,952	4,104	10,058	6,848

WINDHAM COUNTY.

TOWNS.	Total Number Enrolled.	Minors, Mem- bers of Active Militia, and other Exempts.	Liable to Military Duty in case of War or Invasion.	Number Liable to Commutation Tax.
Windham, . .	1,157	400	1,117	757
Ashford, . .	124	31	115	93
Brooklyn, . .	180	39	172	141
Canterbury, . .	117	14	114	103
Chaplin, . .	71	18	60	53
Eastford, . .	65	11	58	54
Hampton, . .	92	10	90	82
Killingly, . .	729	225	701	504
Plainfield, . .	362	25	351	337
Pomfret, . .	146	42	137	104
Putnam, . .	560	198	547	362
Sterling, . .	164	17	159	147
Scotland, . .	62	10	58	52
Thompson, . .	437	82	430	355
Woodstock, . .	220	56	208	164
Total, . .	4,486	1,178	4,317	3,308

FAIRFIELD COUNTY.

TOWNS.	Total Number Enrolled.	Minors, Mem- bers of Active Militia, and other Exempts.	Liable to Military Duty in case of War or Invasion.	Number Liable to Commutation Tax.
Fairfield, . . .	376	78	342	298
Bethel, . . .	572	212	547	360
Bridgeport, . . .	7,855	1,385	7,726	6,470
Brookfield, . . .	91	3	91	88
Danbury, . . .	2,404	1,101	2,356	1,303
Darien, . . .	217	36	206	181
Easton, . . .	101	19	93	82
Greenwich, . . .	1,283	288	1,251	995
Huntington, . . .	481	134	469	347
Monroe, . . .	115	30	103	85
New Canaan, . . .	315	103	286	212
Newtown, . . .	351	73	329	278
New Fairfield, . . .	49	6	43	43
Norwalk, . . .	2,805	1,208	2,614	1,597
Redding, . . .	162	36	157	126
Ridgefield, . . .	260	36	250	224
Stamford, . . .	2,058	641	2,008	1,417
Stratford, . . .	299	130	298	169
Sherman, . . .	74	7	74	67
Trumbull, . . .	125	16	123	109
Weston, . . .	90	16	82	74
Westport, . . .	484	189	457	295
Wilton, . . .	177	41	160	136
Total, . . .	20,744	5,788	20,065	14,956

LITCHFIELD COUNTY.

TOWNS.	Total Number Enrolled.	Minors, Men- bers of Active Militia, and other Exempts.	Liable to Military Duty in case of War or Invasion.	Number Liable to Commutation Tax.
Litchfield, . .	471	144	463	327
Barkhamsted, . .	127	32	116	95
Bethlehem, . .	44	4	42	40
Bridgewater, . .	77	19	72	58
Canaan, . .	112	9	112	103
Colebrook, . .	137	18	135	119
Cornwall, . .	160	26	140	134
Goshen, . .	133	33	127	100
Harwinton, . .	109	16	107	93
Kent, . .	130	14	130	116
Morris, . .	66	5	64	61
New Hartford, . .	350	54	340	296
New Milford, . .	456	125	412	331
Norfolk, . .	176	16	176	160
North Canaan, . .	169	17	169	152
Plymouth, . .	323	50	313	273
Roxbury, . .	120	22	108	98
Salisbury, . .	390	120	366	270
Sharon, . .	296	103	269	193
Torrington, . .	978	259	953	719
Thomaston, . .	492	155	480	337
Washington, . .	217	35	206	182
Warren, . .	60	10	54	50
Watertown, . .	271	38	261	233
Winchester, . .	868	338	848	530
Woodbury, . .	209	46	182	163
Total, . .	6,941	1,708	6,645	5,233

RECAPITULATION BY COUNTIES.

COUNTIES.	Total Number Enrolled.	Minors, Mem- bers of Active Militia, and other Exempts.	Liable to Military Duty in case of War or Invasion.	Number Liable to Commutation Tax.
Hartford, . .	18,990	4,992	18,519	13,998
Tolland, . .	2,815	592	2,726	2,223
New Haven, . .	26,286	5,911	25,690	20,375
Middlesex, . .	4,321	1,030	4,210	3,291
New London, . .	10,952	4,104	10,058	6,848
Windham, . .	4,486	1,178	4,317	3,308
Fairfield, . .	20,744	5,788	20,065	14,956
Litchfield, . .	6,941	1,708	6,645	5,233
Total, . .	95,535	25,303	92,230	70,232

[3.]

REPORTS OF BRIG.-GENL. GEORGE HAVEN, COMMANDING BRIGADE, C. N. G.

BRIGADE HEADQUARTERS, CONNECTICUT NATIONAL GUARD,
NEW LONDON, October 1, 1892.

Brigadier-General A. H. EMBLER,
Adjutant-General.

GENERAL:—

In compliance with the Militia law of the State, I have the honor to submit the following report, covering operations of Brigade, Connecticut National Guard, since May 28, 1892. I was appointed to command the Brigade Connecticut National Guard May 28, 1892; consequently my report does not cover the May parades, which were by Company in the towns where Companies are located.

By direction of the Commander-in-Chief, the Brigade was ordered into the Camp at the State Military Rendezvous, Niantic, August 13th, for an encampment of eight successive days.

The Camp, by order from your office, had been arranged by the Quartermaster-General, and was turned over to me in excellent condition, according to plan previously made by Major W. W. Starr, Jr., Engineer and Signal Officer. Colonel H. C. Morgan, Assistant Quartermaster-General and his able assistant, Captain George A. Cornell, State Armorer, received many congratulations during the week from visiting officers for the manner in which they had arranged matters for the reception of the Brigade. The work in this direction has never been excelled.

The Camp was known as "Camp White," in honor of the late Colonel George M. White, Assistant Adjutant-General.

The following daily routine was adhered to during the week :

[illegible]

Orderly Hour,	-	-	-	-	-	-	-	12.00	M.
Dinner Call,	-	-	-	-	-	-	-	12.30	P. M.
Battery and Machine-Gun Drill,	-	-	-	-	-	-	-	1.30 to 3.30	"
Police Call,	-	-	-	-	-	-	-	3.30	"
Brigade Parade,	-	-	-	-	-	-	-	5.30	"
Supper,	-	-	-	-	-	-	-	6.00	"
Tattoo,	-	-	-	-	-	-	-	10.00	"
Taps,	-	-	-	-	-	-	-	10.30	"

The regiments reported nearly on schedule time, with full ranks. The per cent. of the attendance for the encampment being the largest in the history of the Brigade, aggregating 93.97.

For a full report from each Regiment, Company, and Platoon, you are respectfully referred to the report of Lieutenant-Colonel George M. Cole, Assistant Adjutant-General.

From the fact that this was the first time that the Brigade had been together under the new drill regulations, it was to be expected that the drills would not be up to the standard of the previous years. In this I was very agreeably disappointed, as officers and men had done very thorough and systematic work in the Armory during the last drill season, and came to Camp well informed as to the requirements of the new drill.

Less attention had been paid to the importance of thorough instruction in Guard duty than in the year previous, and consequently some of the Guard duty at Camp White was very poor, while there were some instances when this duty was exceedingly well done; and it was noticeable that a well-informed Commander of the Guard usually had a good Guard, while officers not well up in this important branch of military education had a very poor Guard.

The work at the Sea Coast Battery was in charge of Major George E. Albee, Brigade Inspector of Rifle Practice, and was in every way satisfactory, the men taking hold of mortar practice intelligently, and after the second day's drill were able to throw the shell with great accuracy.

On Monday and Tuesday, August 15th and 16th, I ordered "Outpost Duty," and extended order drill outside the Camp, the Camp being defended by a regiment, while another regiment made the attack from a point to be chosen by its Colonel at least two miles out. The Colonel in charge of the defense also selected his own "line of defense." The positions chosen were in the main correct, but there was an evident lack of knowledge on the part of some of the Field

Officers as to the proper disposition to be made in case of a surprise attack in the rear, as well as a disposition to push for Camp without regard to the fact that, had action been real, entire commands would have been annihilated, and that commands so divided are liable to be beaten in detail by prompt movement of a smaller force. There is no question but that on either day there was ample time after the attack began to have reinforced the outposts from the Camp.

The adoption of the new drill regulations makes a change necessary in the organizations of regiments, and I would respectfully recommend that the next session of the legislature be asked to change existing laws, so that each regiment shall have a Colonel, a Lieutenant-Colonel, two Majors, two Battalion Adjutants, and two Battalion Sergeant-Majors. These changes seem to me to be absolutely necessary to fully carry out the requirements of the new drill. The using of Senior Captains to command Battalions was not a success, as in some cases good Captains were not good horsemen, and in their anxiety to stay on their mounts had little time to give to their Battalions.

The present method of feeding the Brigade is poor and expensive, and not to be compared with the system in vogue in other States. I would suggest that the entire matter of catering be put in the hands of the Commissary-General.

The interest taken in the Guard by Officers of the regular Army, as well as by the military authorities of other States, was again made manifest by the presence of Governor Brown and Staff of Rhode Island, General Kendall and Staff of Rhode Island, Colonel Story, Acting Chief of Ordnance, State of New York; Major Califf, Captain Boehm, Lieutenant Portello, Lieutenant Parkhurst, Lieutenant Reed of the regular Army, as well as officers from Massachusetts, New York, and Pennsylvania.

I respectfully call your attention to the reports of Lieutenant-Colonel Cole, Major Cheney, Major Albee, Major Starr, and Lieutenant-Colonel Almy of my Staff, which seem to cover the work done at Camp White in their respective departments. I also forward reports of Colonels and their subordinates covering the tour of outpost duty.

I cannot close this report without attesting to the fact that the Brigade Staff, together for the first time, and in most cases entire strangers to each other a few weeks prior to the encampment, are en-

titled to great praise for the intelligent and efficient manner in which they performed their duties.

In conclusion, I desire to express my appreciation of the interest taken by the Commander-in-Chief and the gentlemen comprising the Staff in the welfare of the Brigade.

Very respectfully, your obedient servant,

GEORGE HAVEN,

Brigadier-General Commanding Brigade, C. N. G.

BRIGADE HEADQUARTERS,

CONNECTICUT NATIONAL GUARD,

NEW LONDON, October 20, 1892.

Brigadier-General ANDREW H. EMBLER,

Adjutant-General.

GENERAL : —

In accordance with General Orders No. 18, A. G. O., dated Hartford, Sept. 28, 1892, I have the honor to make the following report: The First, Second, Third, and Fourth Regiments, with the First and Second Separate Companies, were ordered to report in the city of New York Oct. 12th, to participate in the military parade of that day, to celebrate the discovery of America.

Transportation was provided by the Quartermaster-General, so that the First Regiment took the Steamer *Narragansett* at Saybrook, the Second Regiment the Steamer *Continental* at New Haven, the Third Regiment the Steamer *City of New York* at New London, and the Fourth Regiment the Steamer *City of Springfield* at Bridgeport.

The First and Second Separate Companies going with the Second and First Regiments.

The entire command, with the exception of the Third Regiment, were landed at or near Peck Slip, East River.

The Third Regiment was landed at Pier Forty, North River, but made the march across town, and was in position on Nassau Street, south of Liberty Street, right resting on Liberty Street, at 9 A. M., being the first regiment to report. The Fourth Regiment reported at 9.30 A. M.; the Second Regiment at 10 A. M. The First Regiment was delayed by the boat being grounded on Saybrook bar, and was unable to get away from Saybrook until 2 A. M., the 12th inst.; but reported to me at 11 A. M. The Second, Fourth, and First Regiments were formed on Liberty Street and Maiden Lane; the Third

Regiment on Nassua Street, right resting on Liberty Street; and the two Separate Companies on Pine Street, east of Nassua, right resting on Nassua Street. The Brigade entered the line at Broadway from Liberty Street at 12.20 P. M., following the best military organizations in the country, and were put in active competition with them.

The formation was column of companies of twelve files, with the exception of the Third Regiment, which paraded nine commands of sixteen files. The march of the Brigade up Broadway through Fifth Avenue was almost a continuous ovation, the men marching with great accuracy and precision, the equipment being superior to that of any Brigade in the line.

Our Machine-Gun Platoon, Signal and Hospital Corps, and Ambulances being the only complete organizations of their kind in the parade.

The Brigade was reviewed at Madison Square by Vice-President Morton, Governor Flower of New York, and Major-General Schofield, commanding U. S. A.; and at Fifty-ninth Street by Governor Bulkeley of our own State and General McMahon, Grand Marshal. From Fifty-ninth Street the Brigade was marched to Fourth Avenue, and dismissed, each Colonel being ordered to move directly to his boat. All the steamers had, in the meantime, been directed to go to or near Thirty-Second Street, East River, to embark the troops. Here the men were given their liberty until midnight, when all were started for home. No serious accidents were reported before, after, or during the parade. Owing to the dense crowds of people who witnessed the parade, I was unable personally to see much of the Brigade during the march; but was very much gratified to hear from army officers and military men of different States after the parade that no Brigade in line excelled the Brigade from Connecticut in marching, discipline, and equipment.

I have the honor to be,

Very respectfully, your obedient servant,

GEORGE HAVEN,

Brigadier-General Commanding Brigade, C. N. G.

[4.]

REPORT OF MAJOR E. HENRY HYDE, JR., COMMANDING FIRST COMPANY
GOVERNOR'S FOOT GUARD.

HEADQUARTERS GOVERNOR'S FOOT GUARD,
HARTFORD, CONN., Nov. 23, 1892.

Brigadier-General ANDREW H. EMBLER,
Adjutant-General State of Connecticut.

GENERAL :

In accordance with your request, I have the honor to submit herewith a report of the parades and drills of this command for the year ending November 30, 1892, and its condition at the present time.

1. Number of commissioned officers, 6; enlisted men, 128; total, 134; gain during the year, 22. By enlistment during the year, the command has not only attained its maximum strength, but has 16 additional men duly enlisted, who are uniformed and equipped at the expense of the command, and carried on the roll as supernumeraries. The personnel of the command was never better.

2. There have been 39 drills during the year, and the attendance has been good.

3. Regular spring field day, May 27th. The entire day was devoted to drill at the Retreat Grounds, which the command was permitted to use by the kind courtesy of Dr. H. P. Stearns, Superintendent of the Retreat.

4. Special parade. In accordance with the usual custom of the command, it paraded as escort to the Grand Army of the Republic on Decoration Day, May 30th.

5. Special volunteer field day, October 17th. In view of the approaching trip to Chicago, the ordinary target practice was omitted, and the entire day devoted to instruction and drill.

6. Parade, October 18th to 24th, under Special Orders No. 135, A. G. O., as escort to His Excellency, Governor Morgan G. Bulkeley, to and from Chicago, Illinois, on the occasion of the dedication of the buildings of the World's Columbian Exposition. The command left Hartford on the morning of the 18th, 134 uniforms, with Colt's

Band of 30 pieces, on a special train with the Governor and his Staff, and the Connecticut Commissioners, and arrived at Chicago Tuesday, the 19th, at 4.15 o'clock P. M. The men were quartered on the cars during their stay in Chicago, and were fed at the Tremont House. The command left Chicago, on Saturday, the 22d inst., at 10 o'clock P. M., and arriving at Hartford on Monday morning, the 24th, at nine o'clock, were received by the Veteran Corps, and escorted the Governor to the State Capitol. On the return trip from Chicago a stop of two hours was made at Niagara, which was devoted to sight-seeing, and was most thoroughly enjoyed by all. At Chicago the command, as escort to the Governor, took part in two parades. First, the civic parade on Wednesday, the line of march being through some of the principal business streets of the city, and the soldierly appearance of the Guard, and the excellence of their evolutions, especially their precision in marching and turning, created the utmost enthusiasm along the line, and they received very high compliments not only from the newspapers and citizens of Chicago, but from many distinguished military men who witnessed the parade. The second parade of Chicago was the grand military parade, in which the President of the United States, the Governors of the various States, the officers of the Exposition, and distinguished guests were escorted by mounted United States troops from the city proper to Washington Park, where they were met by infantry and escorted to the Exposition grounds at Jackson Park. The command leaving Chicago in the morning by a special train, went to Washington Park, and from there found their way to Jackson Park, where they joined the Governor and escorted him to the Exposition grounds, where they were dismissed. The command was again received with great enthusiasm, and maintained fully in all respects its excellence of the previous day.

The citizens of Chicago endeavored to arrange for a military parade, to take place in the business portion of the city on Saturday, the 21st, and General Fitzsimmons of the Illinois National Guard, who had the matter in charge, paid the Governor's Foot Guard the distinguished compliment of tendering them the right of the line, which they accepted; but very much to their regret, as they would have been pleased to march in competition with any of the troops present at Chicago, the parade was necessarily given up, as the time was too short to make satisfactory arrangements.

On the whole, the trip was perhaps one of the most memorable and successful ever taken by the command. Not an accident or misadventure of any kind occurred, and not a man failed to respond to roll call and report for duty on every occasion. Considering the length of the trip and the number of men, this is somewhat remarkable and certainly worthy of comment. Too much praise cannot be given the men for their gentlemanly and soldierly conduct and behavior, and by this, as well as by their military bearing and proficiency, the command maintained its own high reputation and the honor and dignity of the State.

I have the honor to remain,

Very respectfully, your obedient servant,

E. HENRY HYDE, JR.,

Major Commanding First Company Governor's Foot Guard.

[5.]

REPORT OF EXAMINING BOARD.

NEW HAVEN, CONN., November 17, 1892.

To the Adjutant-General of the State,

Hartford, Conn.

SIR:—The Examining Board convened by virtue of General Orders No. 15, Adjutant-General's Office, Hartford, Conn., September 1, 1892, finished its labors on October 27, 1892, having examined three Colonels, one Lieutenant-Colonel, four Majors, fourteen Captains, twenty-four First Lieutenants, thirty Second Lieutenants, and seventeen Regimental Staff Officers, including Signal Officers of the line, and eight officers of the Brigade Staff, in all, one hundred and one.

Four officers who were ordered for examinations failed to appear.

In compliance with par. IV of said orders, the Board has already sent into your office a return of the name and rank of each officer examined, with the special rating in each case. Before final adjournment, the Board deemed it necessary to submit a general report, with certain recommendations, to which it has the honor to invite your attention.

Before the first regular meeting, the Board informally met and authorized Major Welles and Lieutenant Bowen to draw up a list of questions for its use, in order that all officers might be fairly examined, and that the comparative excellence of each might be fairly tested. Copy of questions attached marked "A."

Appendix attached marked "B" will show the Board's system of marking; five being the maximum. Each member of the Board was furnished with one of these blanks for each officer examined.

A glance through the list of questions will show that for Company Officers the Board took from the Infantry Drill Regulations:

Six (6) questions in Definitions, pp. 3-6.

One (1) question in General Principles, pp. 8, 9.

Ten (10) questions in School of the Soldier, pp. 20-54.

Seven (7) questions in School of the Company, pp. 63-92.

Six (6) questions in School of the Battalion, pp. 93-108.

One (1) question in Manual of the Sword, pp. 177-180.
Eight (8) questions in Extended Order, pp. 186-218.
Eleven (11) questions in Manual of Guard Duty.
One (1) question in C. N. G. Regulations, par. 140, and
Four (4) questions in the Militia Law of the State.

For field officers, the questions were modified and changed somewhat, but the same ground was covered.

For Staff Officers, several questions as to their special duties, under the law and regulations, were asked, but from the Drill Regulations, only in regard to the manual of the sword and their positions at ceremonies, except for Adjutants and a few others, whose special duties required a knowledge of the Drill Regulations.

For the two Artillery Officers examined, was drawn up a special list of twenty-four questions from the Artillery tactics, and in addition the questions under the law and regulations.

It was not practicable to ask any officer, especially of the Company Officers, all the questions assigned to his grade, but all officers of the same grade were asked, as nearly as possible, an equal number of questions from each division; the object being, without making the questions exactly alike, to have all of the same grade cover the same ground. Each officer was placed "on honor" to say nothing to any one, of those yet to be examined, as to what questions were asked, or as to what took place before the Board.

Officers, as a rule, have a very good knowledge, of a general nature, about Company and Battalion movements, but when questions were asked *as to details*, they were, in the majority of cases, "all at sea." For example: Question 11, "Length and cadence of step in quick time; in double time; short step; side step; back step; step of pivot man in column of fours." Several of the officers made answer that "there is no short step in double time," but few of them knew the length and application of step of pivot man in column of fours.

Many did not know the distinction between the terms "Distance" and "Interval," "Ploy," and "Deploy," etc. Few could *correctly* explain the movements necessary for "Load," the position of the feet, of the hands, of the arms.

The position of the left hand, par. 19, Drill Regulations, was the rock over which many stumbled. Not one could *correctly* give the commands of Captains, at the command of the Major, "*Fire by Company, three volleys, commence firing,*" par. 267, Drill Regulations. Those officers who were good on Company and Battalion movements were gen-

erally good on extended order drill, but when it came to the Guard Manual, there showed a lamentable lack of study; only *four* officers were marked maximum on questions thirty-nine, "Officer of the Day, of the Guard, how detailed, his duties," par's 46-94, Guard Manual.

But very few could repeat "General Orders Proper," for a Sentinel, par. 170, Guard Manual, and few knew how to properly instruct a sentinel on post: of course not, when they could not repeat "General Orders Proper."

There is a serious lack of knowledge among the officers examined, as regards the Militia law, and many of them had, apparently, never looked inside the covers of the regulations of the Connecticut National Guard, and of par. 140 but few had any knowledge.

More attention should be paid to the matter of Official Communications, the Official Address, Official Signature, etc. The Board respectfully recommends that forms be adopted and sent to every officer of the C. N. G.

The list of questions used in these examinations, being the first formal set to be adopted by any Board in the State, is, naturally, in some degree experimental, incomplete, and therefore open to improvements in many respects; but the Board considers the plan of using a regular list, and of asking all officers of the same grade practically the same number of questions (as nearly as possible of equal value) on each division of the subject covered by the examination, a step in the right direction, and believes that if the same policy is adhered to in future examinations, and improved on as experience may suggest, it will result in making the Boards more thorough, cause the officers to study more, and thus be of much benefit to all, and fairer to the officers to be examined.

The Board would earnestly recommend a more rigid system of inspection, for by no other method can indifference and inattention be remedied and eradicated. Commanding Officers should be held to a most strict accountability; see par. 244, Reg. C. N. G. Field Officers should post themselves more thoroughly as to the *details* of the Drill, the Guard Manual, and the Laws and Regulations; and Captains should be held responsible for the *thorough* instruction of their Lieutenants and Non-Commissioned Officers, see par's 350-353, Reg. C. N. G.

To have a perfect machine, *all* parts must be well finished, well fitted, and well oiled; if there be looseness or rust or a poorly-finished part, the *whole machine* works badly until that particular part is

changed or re-made. So it is with a body of troops; if any part is poorly drilled, or poorly disciplined, the whole body suffers, for, like a chain, the whole body is no stronger than the weakest link.

It has been stated that a man can fight as well who is not up on "points" as one who has the details of the Drill Regulations at his tongue's end; this may be true in special cases, but the rule will not hold good in the long run. The man who, in the Armory or on the parade pays careful attention to the minor details of his drill, making the whole organization a perfectly drilled body, will find, in the day of emergency, that he is required to give no thought to the details of his Drill Regulations, but obeys them mechanically, thus giving his whole mind to the graver issues before him. The officer who, in the Armory or in the Camp of Instructions has paid no attention to the *details* of the military profession, will find when he is ordered for active duty that his mind is clogged, and that he is thinking of anything and everything, rather than of the matter on hand.

Again the Board respectfully recommends that more rigid inspections be given the troops during the drill season, and that they be frequent and unannounced. Also, that in future examinations some inquiry be made as to an officer's moral character. Colonels should be required to make careful and conscientious *confidential* reports once a year to the Adjutant-General of the State, covering the character, qualifications, etc., of each and every officer in his command.

More time should be allowed the Examining Board. An average of two hours, at least, should be the time allotted for each candidate.

It is hoped that the system adopted by the present Board, or one similar, may continue; there is no doubt but that it can be improved, and when perfected, the Board believes that it will redound to the great benefit of the C. N. G., promote discipline, and secure the best material of the State for its active militia.

Respectfully submitted,

Very respectfully,

Your Obedient Servants, WALTER J. LEAVENWORTH,

Late Colonel 2d Reg't., C. N. G.

WILLIAM H. BENTLEY,

Late Lieutenant-Colonel 3d Reg't., C. N. G.

THOMAS T. WELLES,

Late Major 2d Reg't., C. N. G.

WM. H. C. BOWEN,

First Lieut. 5th Inf., U. S. A.,

Staff of the Commander-in-Chief.

[6.]

PENSION AND WAR SERVICE CLAIMS.

ADJUTANT-GENERAL'S OFFICE,

HARTFORD, CONN., November 30, 1892.

Brigadier-General ANDREW H. EMBLER,*Adjutant-General State of Connecticut.*

GENERAL :

It having become part of the duties of your office to furnish record evidence, and to assume prosecution of back pay, bounty, and pension, when desired by discharged Connecticut Volunteers, without charge, I have the honor, as being charged with said duties, to respectfully present the following report, covering the year from November 30, 1891, to November 30, 1892 :

PENSION CLAIMS FILED.

Original claim, soldier,	103
Original claim, widow,	56
Original claim, father,	1
Original claim, mother,	2
Original claim, minor,	9
Increase claim,	52
Accrued,	23
Bounty, back pay, etc.,	6
Amendment of record,	10
Mexican,	1
Indian,	2
Total claims filed,	265

Under the Act of Congress dated June 27, 1890, there has been filed in the Pension Bureau, through this office, 983 claims for pension.

From November 30, 1891, to November 30, 1892, 254 claims have been granted, with a total amount of first payments of \$43,156.61.

On the 4th day of the months of March, June, September, and December of each year, pension vouchers are executed free of charge

to the pensioner, and upon those days the entire force of the office are engaged in that work. The following table will show the number and cash amount of the vouchers executed :

Dec. 4, 1891, 264 vouchers;	Cash amount,	.	.	\$10,463.69
Mch. 4, 1892, 257	" " "	.	.	10,633.65
June 4, 1892, 281	" " "	.	.	13,162.10
Sept. 4, 1892, 299	" " "	.	.	11,456.23
Total, . . .				\$45,715.67

Total amount collected on vouchers executed in this office since June, 1871, \$697,972.20.

The short time in which I have served as Assistant Adjutant-General has not given the opportunities to suggest and adopt all the changes that seem to be advisable, but such as could be made has been done towards expediting the adjudication of claims in the Pension Bureau.

We can already see good results, as claims filed long since I reported for duty have been adjudicated, and the claimants have drawn their first pension money.

I am, very respectfully,

Your obedient servant,

WILLIAM H. TUBBS,

Colonel and Assistant Adjutant-General.

[7.]

GENERAL ORDERS,
IMPORTANT SPECIAL ORDERS,
AND
CIRCULAR.

General Orders.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

*Hartford, December 24, 1891.*GENERAL ORDERS, }
No. 30. }

I. The death of Colonel GEORGE M. WHITE, Assistant Adjutant-General, which occurred at his home in New Haven on the 23d inst., is cause for profound sorrow, not alone at General Headquarters, but in all military, Grand Army, and civic circles. The State, the active militia, the veteran soldier, and his army of friends in civil life, will mourn the loss of a faithful and competent officer, an earnest and helpful comrade, and a delightful friend and companion. Ever ready, at no matter what cost of personal comfort or labor, to give his time and talent to advance the interest of others, it may be truly said he has worn himself out in public service.

II. Colonel White had been Assistant Adjutant-General since January 8, 1885. His peculiar fitness for the position he so ably filled was attested by his appointment by three administrations at General Headquarters.

He was among the first to enter the service of his country in 1861. Mustered as Second Lieutenant of Company C, 1st Regt. Conn. Vol. Infantry (three months), May 16th, and again "for the war" as Captain of Company E, 15th Regt. Conn. Vol. Infantry, in 1862. Captured in battle at Kingston, N. C., paroled March 26, 1865, and discharged May 15, 1865.

He was active in Grand Army work, had been Commander once of Admiral Foote Post, and at the election of officers for 1892, was again unanimously chosen Commander.

The compilation of the splendid "War Records" of Connecticut will ever stand as a monument of his untiring zeal in whatever work he undertook. He was Secretary and Treasurer of the Soldiers Hospital Board. His work and council in the interest of the Veteran Soldiers of Connecticut will be sadly missed by his associates of the Executive Committee and Board. He had been Chief of Police, Superintendent of the Hospital, and Selectman of New Haven, and in every and all positions of his life he had gained by faithful and intelligent service, deserved esteem and confidence.

III. As a mark of respect to his memory, the offices of the Adjutant-General, and Quartermaster-General, at the State Capitol, will be closed, and flags on the Arsenal, State Armories, and Soldiers Home displayed at half-staff on the day of his funeral. Officers and Ex-Officers of all State forces are invited to be present, in civilian's dress, assembling at the New Haven House at 12.30 o'clock P. M., 26th inst.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

ADJUTANT-GENERAL'S REPORT.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE,

Hartford, December 28, 1891.

GENERAL ORDERS, }
 No. 31. }

I. Changes as follows in the commissioned officers of the CONNECTICUT NATIONAL GUARD, have occurred since August 13, 1891:

RESIGNED AND DISCHARGED.

BATTERY A.

First Lieutenant WILLIAM H. LEE, 1st Platoon, December 11, 1891.

SECOND REGIMENT.

Captain GEORGE G. LABARNES, Company K, November 7, 1891.

Captain GEORGE E. ALBEE, Company D, December 15, 1891.

First Lieutenant EDWARD V. RAYNOLDS, Company F, September 28, 1891.

First Lieutenant CHARLES W. BURPEE, Company A, November 7, 1891.

THIRD REGIMENT.

Second Lieutenant FREDERICK W. HAZEN, Company C, September 28, 1891.

Second Lieutenant WILLIAM R. BEACH, Company D, November 13, 1891.

FOURTH REGIMENT.

First Lieutenant GEORGE E. SIMPSON, Company D, December 15, 1891.

First Lieutenant FRANCIS V. GILHULEY, Company B, December 22, 1891.

First Lieutenant WILLIAM B. BRISTOL, Company K, September 24, 1891.

HONORABLY DISCHARGED.

FIRST REGIMENT.

First Lieutenant RICHARD J. KINGSLEY, Company B, September 23, 1891.

Second Lieutenant JOHN J. O'NEIL, Company B, September 23, 1891.

APPOINTMENT REVOKED AND DISCHARGED.

THIRD REGIMENT.

First Lieutenant O. CHESTER SHARPE, Company F, August 26, 1891.

PROMOTED AND APPOINTED.

FIRST REGIMENT.

First Lieutenant Lucius B. Norton, Quartermaster, of New Britain, appointed Adjutant, with rank of Captain, from August 28, 1891, *vice* Wilson, resigned.

Quartermaster-Sergeant Arthur M. Lane, of Windsor, appointed Quartermaster, with rank of First Lieutenant, from August 28, 1891, *vice* Norton, promoted.

First Sergeant Dennis J. Murphy, of Hartford, appointed First Lieutenant Company B, with rank from October 6, 1891, *vice* Kingsley, discharged.

Sergeant Thomas P. Hastings, of Hartford, appointed Second Lieutenant Company B, with rank from October 6, 1891, *vice* O'Neil, discharged.

SECOND REGIMENT.

Second Lieutenant Charles F. McCabe, of New Haven, appointed First Lieutenant Company F, with rank from October 27, 1891, *vice* Reynolds, resigned.

Sergeant Clarence B. Dann, of New Haven, appointed Second Lieutenant Company F, with rank from October 27, 1891, *vice* McCabe, promoted.

Second Lieutenant Daniel L. Barber, of Wallingford, appointed Captain Company K, with rank from November 17, 1891, *vice* La Barnes, resigned.

Henry Norton, Jr., of Wallingford, appointed Second Lieutenant Company K, with rank from November 17, 1891, *vice* Barber, promoted.

Second Lieutenant Edwin Hart, of Waterbury, appointed First Lieutenant Company A, with rank from November 23, 1891, *vice* Burpee, resigned.

Sergeant James Geddes, of Waterbury, appointed Second Lieutenant Company A, with rank from November 23, 1891, *vice* Hart, promoted.

THIRD REGIMENT.

George M. Cole, of New London, appointed Adjutant, with rank of Captain, from August 15, 1891, *vice* Smith, promoted.

Second Lieutenant Henry E. Burton, of Killingly, appointed First Lieutenant Company F, with rank from October 13, 1891, *vice* Sharpe, discharged.

Frank E. Warren, of Killingly, appointed Second Lieutenant Company F, with rank from October 13, 1891, *vice* Burton, promoted.

Sergeant Frank W. Rogers, Jr., of New London, appointed Second Lieutenant Company D, with rank from December 1, 1891, *vice* Beach, resigned.

FOURTH REGIMENT.

Second Lieutenant Edward G. Aiken, of Norwalk, appointed First Lieutenant Company F, with rank from August 11, 1891, *vice* Smith, discharged.

First Sergeant Albert J. Wilcoxson, of Norwalk, appointed Second Lieutenant Company F, with rank from August 11, 1891, *vice* Aiken, promoted.

Second Lieutenant Francis E. Alden, of Stamford, appointed First Lieutenant Company C, with rank from August 24, 1891, *vice* Walsh, resigned.

Corporal Gilbert L. Fitch, of Stamford, appointed Second Lieutenant Company C, with rank from August 24, 1891, *vice* Alden, promoted.

Second Lieutenant William H. Fryer, of Stratford, appointed First Lieutenant Company K, with rank from October 8, 1891, *vice* Bristol, resigned.

Sergeant William F. Holmes, of Stratford, appointed Second Lieutenant Company K, with rank from October 8, 1891, *vice* Fryer, promoted.

II. The following are announced as the figures of merit of each organization of the CONNECTICUT NATIONAL GUARD for the month of November, 1891, based on the drill reports for the month.

FIRST REGIMENT.					SECOND REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Mem'ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Mem'ship.	Figure of Merit.
A.	Dec. 2,	4	68	92.28	A.	Dec. 3, 8.00 A.M.	5	68	93.88
B.	Dec. 2,	4	68	90.26	B.	Dec. 8, 9.00 A.M.	4	68	91.91
C.	Dec. 2,	5	68	96.33	C.	Dec. 3, 4.00 P.M.	4	65	93.13
D.	Dec. 3,	5	65	89.67	D.	Dec. 11, 2.00 P.M.	4	63	91.81
E.	Dec. 1,	6	68	88.24	E.	Dec. 4, 11.00 A.M.	4	67	94.04
F.	Dec. 1,	6	53	83.64	F.	Dec. 1, 8.00 A.M.	4	67	96.65
G.	Dec. 2,	5	64	88.38	G.	Dec. 5, 4.00 P.M.	4	67	95.90
H.	Dec. 1,	5	66	92.45	H.	Dec. 8, 4.00 P.M.	5	60	84.14
I.	Dec. 1,	4	68	90.68	I.	Dec. 2, 12.00 M.	4	68	93.80
K.	Dec. 1,	6	53	86.94	K.	Dec. 1, 8.00 A.M.	4	58	83.39
Hosp. Corps.					Hosp. Corps.				
Dec. 5,		3	4	90.84	Dec. 7, 4.00 P.M.		2	5	90.00
1st Signal Corps.					2d Signal Corps.				
Dec. 8,		3	9	88.24	Dec. 1, 12.00 M.		4	10	93.75
1st M.-G. Plat.					2d M.-G. Plat.				
Dec. 2		3	9	92.60	Dec. 1, 8.00 A.M.		2	9	95.83

Figure of merit of Regiment, **90.04** Figure of merit of Regiment, **92.17**

THIRD REGIMENT.					FOURTH REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Mem'ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Mem'ship.	Figure of Merit.
A.	Dec. 2, 6.00 P.M.	5	50	73.88	B.	Dec. 3, 2.00 P.M.	5	67	88.44
B.	Dec. 1, 6.00 P.M.	5	59	86.52	C.	Dec. 5, 8.00 A.M.	5	57	82.80
C.	Dec. 2, 11.00 A.M.	4	66	85.25	D.	Dec. 4, 2.00 P.M.	4	64	86.81
D.	Dec. 2, 9.00 A.M.	6	55	81.26	E.	Dec. 3, 2.00 P.M.	5	65	89.67
E.	Dec. 2, 10.30 P.M.	4	62	80.46	F.	Dec. 3, 2.00 P.M.	5	61	80.21
F.	Dec. 2, 5.00 P.M.	5	58	78.22	G.	Dec. 3, 9.00 P.M.	5	51	75.62
G.	Dec. 1, 12.00 M.	4	55	82.50	I.	Dec. 1,	5	59	93.30
I.	Dec. 2, 10.30 A.M.	5	67	85.45	K.	Dec. 2,	5	55	70.68
Hosp. Corps.					Hosp. Corps.				
Dec. 1, 9.00 A.M.		2	5	100.00	Dec. 1,		3	4	85.13
3d Signal Corps.					4th Signal Corps.				
Dec. 2, 3.00 P.M.		3	10	96.67	Dec. 1,		3	10	93.33
3d M.-G. Plat.					4th M.-G. Plat.				
Dec. 1, 9.00 A.M.		3	9	100.00	Dec. 5, 5.00 P.M.		3	8	97.22

Figure of merit of Regiment, **86.38** Figure of merit of Regiment, **85.75**

SEPARATE COMPANIES.					BATTERY A.				
	Received at Brigade Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.	Platoons.	Received at Battery Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.
1st	Dec. 1, 11.00 A.M.	4	53	71.85	1st	Dec. 2,	2	35	83.72
2d	Dec. 4, 9.00 A.M.	4	54	77.26	2d	Dec. 3,	2	35	83.49
Figure of merit of Battery,									83.61

III. The issuance of this order has been delayed by reason of tardy receipt of Drill Reports, at this office.

IV. Private Allen J. Tucker, Company I, Second Regiment, Connecticut National Guard, has been dishonorably discharged from the military service of the State, in accordance with sentence of Field Officer's Court-Martial.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE,

Hartford, January 22, 1892.

GENERAL ORDERS, }

No. I. }

I. Three months having elapsed since G. O. No. 28, A. G. O., series 1891, was issued, it is believed that sufficient opportunity has been given officers to qualify themselves to teach the men under them, if Par. II of said order has been complied with. Therefore, beginning February 1st, 1892, the infantry organizations of the CONNECTICUT NATIONAL GUARD will drill in the new drill regulations approved by the Secretary of War, October 3, 1891.

To insure uniformity throughout the Brigade of the CONNECTICUT NATIONAL GUARD, all infantry maneuvers and exercises not embraced in this system, are hereby prohibited.

Brigade and Regimental Headquarters and commandants of companies of infantry will make requisition for one dozen copies each. The old [Upton] tactics now on hand may be dropped from property account.

II. Changes as follows in the commissioned officers of the CONNECTICUT NATIONAL GUARD, have occurred since December 28, 1891 :

RESIGNED AND DISCHARGED.

FIRST REGIMENT.

Colonel	CHARLES B. ERICHSON,	January 9, 1892.
First Lieutenant	CHARLES CHENEY,	Company G, January 6, 1892.

SECOND REGIMENT.

Captain	FREDERICK L. LEHR,	Company E, January 13, 1892.
Second Lieutenant	JOSEPH T. ELLIOTT,	Company H, January 21, 1892.

FOURTH REGIMENT.

Colonel	HENRY SKINNER,	December 31, 1891.
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PROMOTED AND APPOINTED.

BATTERY A.

Second Lieutenant Barlow S. Honce, of Branford, appointed First Lieutenant First Platoon, with rank from December 21, 1891, *vice* Lee, resigned.

First Sergeant George T. Fowler, of North Branford, appointed Second Lieutenant First Platoon, with rank from December 21, 1891, *vice* Honce, promoted.

SECOND REGIMENT.

First Lieutenant Wallace E. Beach, of New Haven, appointed Captain Company D, with rank from December 29, 1891, *vice* Albee, resigned.

Second Lieutenant James C. Twining, of New Haven, appointed First Lieutenant Company D, with rank from December 29, 1891, *vice* Beach, promoted.

Sergeant Frederick R. Fairbanks, of New Haven, appointed Second Lieutenant Company D, with rank from December 29, 1891, *vice* Twining, promoted.

FOURTH REGIMENT.

Captain Russell Frost, Company D, of South Norwalk, appointed Colonel, with rank from January 8, 1892, *vice* Skinner, resigned.

Second Lieutenant Charles H. Oakes, of South Norwalk, appointed First Lieutenant Company D, with rank from December 23, 1891, *vice* Simpson, resigned.

Sergeant Charles D. Taylor, of South Norwalk, appointed Second Lieutenant Company D, with rank from December 23, 1891, *vice* Oakes, promoted.

III. The following are announced as the figures of merit of each organization of the CONNECTICUT NATIONAL GUARD for the month of December, 1891, based on the drill reports for the month.

FIRST REGIMENT.					SECOND REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Mem'ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Mem'ship.	Figure of Merit.
A.	Jan. 2,	5	68	87.50	A.	Jan. 1, 8.00 A.M.	4	68	97.43
B.	Jan. 2,	5	67	83.96	B.	Jan. 5, 9.00 A.M.	4	68	88.97
C.	Jan. 2,	5	68	95.22	C.	Jan. 4, 8.00 A.M.	5	67	94.04
D.	Jan. 4,	5	65	83.51	D.	Jan. 3, 12.00 M.	5	64	93.06
E.	Jan. 1,	4	68	84.93	E.	Jan. 2, 11.00 A.M.	5	68	89.71
F.	Jan. 1,	4	55	81.59	F.	Jan. 1, 8.00 A.M.	5	68	95.96
G.	Jan. 1,	4	68	91.91	G.	Jan. 6, 9.00 A.M.	5	66	92.83
H.	Jan. 2,	4	66	88.66	H.	Jan. 7, 8.00 A.M.	4	62	85.70
I.	Jan. 4,	5	68	85.30	I.	Jan. 2, 8.00 A.M.	5	65	90.44
K.	Jan. 2,	4	51	83.91	K.	Jan. 2, 8.00 A.M.	5	60	92.06
Hosp. Corps.					Hosp. Corps.				
	Jan. 11,	2	4	82.50		Jan. 4, 11.00 A.M.	2	5	85.00
1st Signal Corps.					2d Signal Corps.				
	Jan. 1,	2	9	78.06		Jan. 4, 11.00 A.M.	2	10	93.74
1st M.-G. Plat.					2d M.-G. Plat.				
	Jan. 1,	2	9	87.50		Jan. 1, 8.00 A.M.	2	9	97.22
Figure of merit of Regiment, 85.89					Figure of merit of Regiment, 92.01				

THIRD REGIMENT.						FOURTH REGIMENT.					
Companies.	Received at Regimental Headquarters.		No. of Drills.	Av. Men's ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.		No. of Drills.	Av. Men's ship.	Figure of Merit.
A.	Jan. 2,	9.00 A.M.	5	51	77.57	B.	Jan. 4,		5	65	88.13
B.	Jan. 1,	3.00 P.M.	4	62	88.41	C.	Jan. 4,		4	56	88.44
C.	Jan. 1,	3.00 P.M.	5	66	82.60	D.	Jan. 12,		5	66	87.15
D.	Jan. 1,	9.00 A.M.	4	59	84.83	E.	Jan. 2,		4	67	84.71
E.	Jan. 2,	6.00 P.M.	5	61	78.17	F.	Jan. 2,		5	60	79.14
F.	Jan. 5,	1.00 P.M.	5	58	67.87	G.	Jan. 2,		5	59	83.56
G.	Jan. 1,	3.00 P.M.	5	58	80.81	I.	Jan. 1,		4	64	93.85
I.	Jan. 2,	6.00 P.M.	5	66	79.57	K.	Jan. 4,		5	60	67.90
Hosp. Corps.						Hosp. Corps.					
	Jan. 2,	6.00 P.M.	2	5	95.00		Jan. 4,		2	5	95.00
3d Signal Corps.						4th Signal Corps.					
	Jan. 4,	9.20 A.M.	2	10	95.00		Jan. 4,		2	10	87.50
3d M.-G. Plat.						4th M.-G. Plat.					
	Jan. 2,	6.00 P.M.	2	9	98.61		Jan. 7,		2	9	94.45
Figure of merit of Regiment,					84.40	Figure of merit of Regiment,					86.35

SEPARATE COMPANIES.						BATTERY A.					
	Received at Brigade Headquarters.		No. of Drills.	Average Membership.	Figure of Merit.	Platoons.	Received at Battery Headquarters.		No. of Drills.	Average Membership.	Figure of Merit.
1st	Jan. 1,	11.00 A.M.	5	53	62.41	1st	Jan. 1,		2	33	70.88
2d	Jan. 4,	6.00 P.M.	5	52	69.60	2d	Jan. 1,		2	38	78.43
						Figure of merit of Battery,					74.66

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE,

Hartford, February 10, 1892.

GENERAL ORDERS, }
 No. 2. }

I. William H. Tubbs, of New London, Ex.-Colonel 3d Regiment, Connecticut National Guard, is hereby appointed Assistant Adjutant-General with rank of Colonel.

II. Colonel Tubbs will attend to matters, about which he has been advised, pertaining to affairs of this Office at the National Capitol, and will report in person at Hartford not later than Tuesday 16th inst.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, February 18, 1892.

GENERAL ORDERS, }
 No. 3. }

I. Changes as follows in the commissioned officers of the CONNECTICUT NATIONAL GUARD, have occurred since January 22, 1892.

RESIGNED AND DISCHARGED.

FIRST REGIMENT.

Captain	Lucius B. Norton,	Adjutant,	February 15, 1892.
First Lieutenant	Arthur M. Lane,	Quartermaster,	February 15, 1892.
Captain	Charles H. Faulkner,	Insp. Rifle Prac,	February 15, 1892.

SECOND REGIMENT.

First Lieutenant	William H. Newton,	Paymaster,	January 23, 1892.
First Lieutenant	Charles G. Miller,	Company B,	February 16, 1892.

THIRD REGIMENT.

Second Lieutenant	James T. Lynch,	Company E,	February 6, 1892.
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ADJUTANT-GENERAL'S REPORT.

FOURTH REGIMENT.

Captain	Edward Finn,	Adjutant,	January 22, 1892.
First Lieutenant	Wilbur F. Coe,	Quartermaster,	February 4, 1892.
First Lieutenant	Herman M. Eriksson,	Company G,	February 3, 1892.
Second Lieutenant	John V. Scofield,	Company G,	February 6, 1892.
Second Lieutenant	Charles D. Taylor,	Company D,	February 11, 1892.

PROMOTED AND APPOINTED.

FIRST REGIMENT.

Major Charles L. Burdett, of Hartford, Brigade Engineer and Signal Officer appointed Colonel, with rank from January 18, 1892, *vice* Erichson, resigned.

Henry S. Redfield, of Hartford, appointed Adjutant, with rank of Captain from February 15, 1892, *vice* Norton, resigned.

Frederick D. Rathbun, of Hartford, appointed Quartermaster, with rank of First Lieutenant from February 15, 1892, *vice* Lane, resigned.

First Lieutenant William C. Cheney, of South Manchester, appointed Inspector of Rifle Practice, with rank of Captain from February 15, 1892, *vice* Faulkner, resigned.

Thomas F. Flanigan, of Hartford, appointed Captain Company B, with rank from January 15, 1892, *vice* Lawler, deceased.

Private Henry R. Cheney, of Manchester, appointed First Lieutenant Company G, with rank from January 11, 1892, *vice* Cheney, resigned.

SECOND REGIMENT.

Private Rodmond V. Beach, Company F of New Haven, appointed Paymaster, with rank of First Lieutenant from January 25, 1892, *vice* Newton, resigned.

Theodore H. Sucher, of New Haven, appointed Captain Company E, with rank from January 26, 1892, *vice* Lehr, resigned.

FOURTH REGIMENT.

Charles W. Burpee, of Bridgeport, appointed Adjutant, with rank of Captain from January 22, 1892, *vice* Finn, resigned.

James K. Crofut, of Norwalk, appointed Quartermaster, with rank of First Lieutenant from February 4, 1892, *vice* Coe, resigned.

Second Lieutenant Merritt F. White, of Bridgeport, appointed First Lieutenant Company B, with rank from January 12, 1892, *vice* Gilhuley, resigned.

First Sergeant George D. Shelton, of Bridgeport, appointed Second Lieutenant Company B, with rank from January 12, 1892, *vice* White, promoted.

Charles E. Doty, of South Norwalk, appointed Captain Company D, with rank from January 29, 1892, *vice* Frost, promoted.

II. The following are announced as the figures of merit of each organization of the CONNECTICUT NATIONAL GUARD for the month of January, 1892, based on the drill reports for the month.

FIRST REGIMENT.

SECOND REGIMENT.

Companies.	Received at Regimental Headquarters.	No of Drills.	Av. Men's ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.
A.	Feb. 2, 12.15 P.M.	4	68	88.24	A.	Feb. 1, 8.00 P.M.	4	68	96.51
B.	Feb. 3,	4	67	87.69	B.	Feb. 3, 8.00 A.M.	4	67	92.17
C.	Feb. 3, 6.30 P.M.	4	65	95.59	C.	Feb. 1, 4.00 P.M.	4	66	92.83
D.	Feb. 3, 7.30 P.M.	4	64	85.25	D.	Feb. 1, 9.00 A.M.	4	68	96.23
E.	Feb. 2, 12.15 P.M.	4	68	87.50	E.	Feb. 3, 8.00 P.M.	4	68	92.65
F.	Feb. 1, 6.30 P.M.	3	55	84.77	F.	Feb. 1, 8.00 A.M.	4	68	98.53
G.	Feb. 1, 6.30 P.M.	4	66	90.93	G.	Feb. 1, 8.00 P.M.	4	68	97.06
H.	Feb. 2, 2.15 P.M.	4	67	87.32	H.	Feb. 8, 2.00 P.M.	4	61	85.95
I.	Feb. 1, 7.15 A.M.	4	67	87.74	I.	Feb. 3, 8.00 A.M.	4	65	95.82
K.	Feb. 2,	4	51	87.38	K.	Feb. 2, 11.00 A.M.	4	62	94.57
Hosp. Corps.					Hosp. Corps.				
Feb. 10,		2	4	73.13	Feb. 1, 4.00 P.M.	2	5	91.95	
1st Signal Corps.					2d Signal Corps.				
Feb. 1, 6.30 P.M.		2	9	78.06	Feb. 2, 8.00 A.M.	2	10	100.00	
1st M.-G. Plat.					2d M.-G. Plat.				
Feb. 1, 6.30 P.M.		2	9	100.00	Feb. 2, 8.00 P.M.	2	9	100.00	
Figure of merit of Regiment, 87.20					Figure of merit of Regiment, 94.94				

THIRD REGIMENT.

FOURTH REGIMENT.

Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.
A.	Feb. 1, 3.00 P.M.	4	54	84.21	B.	Feb. 3, 10.00 A.M.	4	65	92.74
B.	Feb. 1, 9.00 A.M.	4	63	90.23	C.	Feb. 2, 5.00 P.M.	4	54	85.13
C.	Feb. 1, 9.00 A.M.	4	67	82.10	D.	Feb. 3, 7.00 P.M.	4	66	86.77
D.	Feb. 1, 9.00 A.M.	4	62	87.31	E.	Feb. 3, 7.00 P.M.	4	67	89.18
E.	Feb. 2, 12.00 M.	4	61	76.53	F.	Feb. 3, 10.00 A.M.	4	60	77.90
F.	Feb. 2, 9.00 A.M.	4	57	73.15	G.	Feb. 3, 10.00 A.M.	4	59	84.83
G.	Feb. 2, 9.00 A.M.	4	58	84.69	I.	Feb. 1,	4	65	93.51
I.	Feb. 2, 6.00 P.M.	4	63	83.88	K.	Feb. 3, 7.00 P.M.	4	59	70.00
Hosp. Corps.					Hosp. Corps.				
	Feb. 1, 3.00 P.M.	2	5	100.00		Feb. 3, 10.00 A.M.	2	5	85.00
3d Signal Corps.					4th Signal Corps.				
	Feb. 1, 9.00 P.M.	2	10	95.00		Feb. 2,	2	10	92.50
3d M.-G. Plat.					4th M.-G. Plat.				
	Feb. 1, 3.00 P.M.	2	9	100.00		Feb. 3, 10.00 A.M.	2	9	94.45
Figure of merit of Regiment, 87.01					Figure of merit of Regiment, 86.55				

SEPARATE COMPANIES.					BATTERY A.				
	Received at Brigade Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.	Platoons.	Received at Battery Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.
1st	Feb. 1, 10.00 A.M.	4	53	67.13	1st	Feb. 1,	2	35	72.06
2d	Feb. 5, 9.00 A.M.	4	52	72.00	2d	Feb. 3,	2	38	83.04
					Figure of merit of Battery, 77.55				

III. Captains of Companies will hereafter not return property to the Quartermaster-General's Department until properly authorized to do so.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, February 27, 1892.

GENERAL ORDERS, }
 No. 4. }

The following members of the National Guard are announced as having qualified during the season of 1891, as Sharpshooters, First-Class Marksmen, and Marksmen, in accordance with Article XXVII, Regulations C. N. G., 1884, and are awarded the State decoration, which is to be worn whenever the dress uniform is worn.

The letter "V" or "X" prefixed to grade in record of previous qualifications, or in "Designation 1891," indicates that year to have been the fifth (V), or tenth (X), qualifications.

Commanding officers will make immediate requisition for badges and bars for winners in 1891, as published in this order.

BRIGADE STAFF AND NON-COMMISSIONED STAFF.

NAME.	2d Class.			1st Class.			Designa- tion. 1891.	Previous Qualifications.				
	300 Yds.	400 Yds.	Total.	200 Yds.	300 Yds.	Total.		1878-87.	1888.	1889.	1890.	
Brig.-Gen. T. L. Watson.....	20	21	41	20	23	43	X Sharpsh'r.	V. s '86	s	s	s	
Lt. Col. L. N. Van Keuren,								s '87				
A. A. G.....	18	18	36	20	20	40	Sharpsh'r.	..	..	V m	1st cl. m.	
Lt.-Col. G. L. Porter, M. D...	16	14	30	16	14	30	V Marks'n.	m '87	m	m	m	
Maj. C. L. Burdett, E. & S. O.	18	21	39	19	23	42	Sharpsh'r.	..	..	X s	s	
Capt. G. C. Bishop, A. D. C..	21	19	40	20	23	43	V Sharpsh'r.	m '87	m	1st cl. m.	s	
Sergt. W. A. Pratt, Orderly.	23	17	40	20	23	43	Sharpsh'r.	..	..	..	V s	

FIRST REGIMENT.

FIELD, STAFF, NON-COMMISSIONED STAFF, AND HOSPITAL CORPS.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.				
	300 Yds.	400 Yds.	Total.	300 Yds.	500 Yds.	Total.		1873-87.	1888.	1889.	1890.	
Col. C. B. Erichson.....	21	8	29	20	21	41	V Sharps'r.	m '78 m '79 m '80	..	..	s	
Lt.-Col. A. L. Thompson	22	5	27	24	24	48	Sharps'r.	..	..	X s	s	
Major T. F. Rockwell, Surg..	17	16	33	19	19	38	1st Cl. M.	..	..	..	1st cl. m.	
Capt. C. H. Faulkner, I. R. P.	22	5	27	20	22	42	Sharps'r.	m '78	..	..	s	
1st Lieut. A. M. Lane, Q.-M..	23	7	30	20	23	43	"	..	..	V m	s	
1st Lieut. W. C. Cheney, P.M.	22	4	26	21	22	43	"	..	m	m	s	
1st Lieut. F. H. Peirier, A. Sur	22	5	27	20	24	44	"	..	..	..	V s	
Chaplain H. H. Kelsey.....	20	22	42	20	22	42	"	..	..	..	s	
Sergt. Maj. T. A. Kimberly...	24	4	28	21	22	43	"	X s '87 V s '84	s	1st cl. m.	s	
Drum Major W. C. Steele....	14	15	29	21	21	42	"	1st cl. m. '85 s '87	m	..	..
Private Morrissey, W. J.....	16	9	25	13	15	28	Marksman.	..	..	..	..
" Starr, T. K.....	21	21	42	20	22	42	Sharps'r.	..	..	..	..

COMPANY A.

Captain E. Schulze.....	23	21	44	19	19	38	1st Cl. M.	..	X s	s	1st cl. m.	
1st Lieut. W. C. Herter.....	16	15	31	13	17	30	V Marks'n.	m '87	m	s	m	
2d Lieut. J. C. Bailey.....	16	13	29	14	18	32	M rksman.	V m '86	m	..	1st cl. m.	
Sergeant C. F. Wolf.....	17	16	33	20	13	33	"	..	..	..	V m	
" J. Ojinski.....	19	12	31	17	14	31	"	..	..	m	m	
Corporal E. H. Siemer.....	19	13	32	15	14	29	"	..	..	..	m	
" W. J. Ganley.....	13	13	26	14	15	29	"	..	..	..	m	
Trump'r C. A. Hansen.....	17	9	26	13	17	30	"	..	m	..	m	
Private Barton, F. H.....	20	17	37	14	14	28	"	..	..	..	..
" Eichler, J.....	15	11	26	14	18	32	"	..	..	..	..
" Hemmerling, F. J.....	15	15	30	15	14	29	"	..	..	..	..
" Martin, J. E.....	13	16	29	14	14	28	"	..	..	..	m	
" Miller, W. E.....	21	18	39	18	20	38	1st Cl. M.	..	..	..	..
" Roemer, G. A.....	13	13	26	15	15	30	Marksman.	..	..	..	..

COMPANY B.

Captain J. F. Lawler.....	15	11	26	18	22	40	Sharps'r.	V m '85	m	..	s	
Sergeant W. E. Hogan.....	15	10	25	16	16	32	Marksman.	..	1st cl. m.	..	..
" T. P. Hastings.....	14	13	27	15	19	34	"	..	m	m	..	
Corporal J. J. Starkey.....	15	10	25	19	21	40	Sharps'r.	..	..	..	..
" T. J. Ward.....	17	10	27	16	22	38	Marksman.	..	m	m	..	
Private Callahan, D. P.....	14	12	26	14	20	34	"	..	..	..	..
" Hellyar, T. E.....	17	8	25	17	18	35	1st Cl. M.	
" Ryan, T. W.....	15	10	25	20	18	38	"	m	..	
" Shea, F. E.....	18	7	25	17	15	32	Marksman.	

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COMPANY C.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.			
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.
Captain M. Laubscher.....	18	19	37	19	20	39	1st Cl. M.				
2d Lieut. H. M. Loomis.....	14	14	28	17	13	30	Marksman.	..	..	..	m
Q.-M.Sgt. F. E. Davis.....	16	17	33	18	21	39	1st Cl. M.	..	..	..	1st c. m.
Sergeant J. W. Hefferon.....	19	13	32	17	18	35	"				
" M. Neilligan.....	14	15	29	16	17	33	Marksman.				
Corporal C. H. Sanders.....	16	13	29	15	17	32	"				
" M. C. Wetstein.....	17	17	34	18	14	32	"				
" J. H. Barnett.....	15	16	31	13	15	28	"				
Private Carlson, A.....	14	14	28	13	14	27	"				
" Donley, J.....	15	15	30	13	15	28	"				
" Eadie, J. L.....	16	13	29	19	17	36	1st Cl. M.				
" Falter, F. W.....	14	14	28	16	18	34	Marksman.				
" Haan, C. F.....	15	15	30	19	17	36	1st Cl. M.	..	..	..	m
" Kynoch, D.....	15	13	28	16	15	31	Marksman.				
" Meade, C. E.....	15	17	32	15	18	33	"	..	..	..	m
" Milne, J. D.....	19	22	41	21	20	41	Sharps'r.	..	..	..	1st c. m.
" McLean J.....	16	20	36	16	16	32	Marksman.				
" O'Neil, J. J.....	16	19	35	19	20	39	1st Cl. M.				
" Pitney, C. H.....	14	13	27	15	15	30	Marksman.				

COMPANY D.

Captain W. E. Allen.....	22	16	38	19	21	40	X Sharps'r.	V s '84 1st c m.'86 1st c m.'87	..	s	s
1st Lieut. F. W. Humphrey..	20	7	27	17	17	34	1st Cl. M.	..	..	..	V m
2d Lieut. S. M. Leonard.....	15	20	35	17	17	34	"	1st c m.'87	..	s	s
Q.-M.Sgt. H. E. Stearns.....	19	10	29	21	16	36	"	..	..	m	1st c. m.
Sergeant L. W. Goodrich....	15	14	29	17	16	33	"	m'83 m'84 m'85			
" W. H. Barnes.....	13	15	28	17	16	33	"	..	..	1st c. m.	
Corporal F. W. Dimock.....	17	13	30	19	16	35	"	..	..	..	m
Corporal H. L. Goodrich.....	15	13	28	14	13	27	Marksman.	..	..	..
" F. J. Fitzpatrick.....	15	13	28	17	13	30	"	..	..	..
Private Allen, H. W.....	14	13	27	16	14	30	"	..	..	..	m
" Allen, F. N.....	18	7	25	17	19	36	1st Cl. M.	..	..	..	s
" Button, C. W.....	20	6	26	16	21	37	Marksman.	..	..	..	m
" Burke, W. J.....	14	12	26	16	13	29	"	..	..	..
" Haigis, G. F.....	17	9	26	14	13	27	"	..	..	..
" Lockwood, V.....	13	12	25	13	15	28	"	..	..	..	m
" Sleath, J.....	16	10	26	17	17	34	1st Cl. M.				

COMPANY E.

Captain G. O. McLean.....	22	5	27	20	23	43	Sharps'r.	..	..	..	V s
Sergeant M. W. Humason....	16	12	28	17	20	37	1st Cl. M.	m'84 m'87	..	..	..
Q.-M.Sgt. H. F. Latham.....	15	11	26	19	17	36	"	V m '84	..	..	..
Sergeant H. N. Saunders.....	23	5	28	17	15	32	Marksman.	..	V m	1st c. m.	1st c. m.
" G. L. Johnson.....	16	16	32	15	17	32	"	..	..	m	1st c. m.
Corporal W. E. Brainard.....	20	6	26	15	14	29	"	..	..	..
Trump'r W. H. Scheuy.....	17	8	25	13	18	31	"	..	..	..
Private Blodgett, J. M.....	17	9	26	15	14	29	"	..	..	..
" Billiam, F.....	17	19	36	20	17	37	1st Cl. M.	..	..	..	1st c. m.
" Cadwell, F. S.....	13	13	26	15	13	28	Marksman.	..	..	..
" Gothier, R. G.....	15	11	26	15	16	31	"	..	..	..
" Green, F. M.....	18	10	28	15	15	30	"	..	..	..
" Green, G. W.....	19	9	28	18	14	32	"	..	..	m	1st c. m.
" Johnson, C. E.....	14	11	25	17	13	30	"	..	..	..
" Mechan, J. F.....	17	8	25	17	18	35	1st Cl. M.	..	..	..
" Pease, W. S.....	18	8	26	20	16	36	"	..	..	..
" Rittner, F. W.....	16	11	27	13	14	27	Marksman.	..	..	..
" Trumbull, J. H.....	15	14	29	16	14	30	"	..	..	..

COMPANY F.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.				
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.	
Captain C. H. Wickham...	22	18	40	19	21	40	Sharps'r.	V s '83 s '84	1st c. m.	..	s	
1st Lieut. L. B. Hubbard.....	21	5	26	18	32	40	X Sharps'r.	V s '81 s '86	1st c. m.	m	s	
2d Lieut. L. N. Mansuy.....	17	15	32	17	21	38	V 1st Cl. M.	m '81 m '83 s '84	..	..	s	
1st Sergt. F. E. Hovey.....	21	17	38	19	20	39	1st Cl. M.	V m '87	1st c. m.	1st c. m	s	
Q-m. Sgt. E. F. Bolles.....	22	19	41	23	21	44	Sharps'r	..	V 1st c. m.	..	1st c. m.	
Sergeant N. H. Stevens.....	19	10	29	17	18	35	1st Cl. M.	..	V m	m	s	
" H. S. Strong.....	15	17	32	19	18	37	"	..	..	..	V s	
" W. S. Jacobs.....	23	14	37	19	16	35	"	..	..	m		
Corporal L. J. Alger.....	13	17	30	22	21	43	V Sharps'r.	m '85	..	m	m	
" W. S. Evans.....	20	17	37	21	21	42	"	1st c. m. '87	..	..	..
" W. H. Bruce.....	17	20	37	20	14	34	1st Cl. M.	m '86 m '87	s	s	1st c. m.	
" F. C. Ives.....	17	20	37	20	21	41	Sharps'r.	m '86	..	..	s	
" W. H. A. Fenton.....	16	17	33	18	21	39	1st Cl. M.	m '83	..	..	m	
" L. F. Broadhurst.....	20	15	35	19	13	32	Marksmen.	..	..	m	m	
" W. F. Johnson.....	21	18	39	20	20	40	Sharps'r.	..	..	..	s	
Private Adams, A. G.....	17	7	24	17	20	37	1st Cl. M.	..	..	..	..
" Arnold, W. T.....	17	12	29	22	19	41	Sharps'r.	..	..	m	s	
" Bronson, R. T.....	20	9	29	18	16	34	1st Cl. M.	..	..	..	..
" Chamberlin, J. H.....	16	17	33	20	18	38	"	..	..	m	s	
" Cadwell, E. E.....	14	15	29	17	17	34	"	..	..	..	..
" Cooper, E.....	19	12	31	20	21	41	Sharps'r.	..	V m	m	s	
" Gates, J. J.....	13	16	29	20	22	42	"	m '81 m '82 s '83	..	..	..
" Green, H.....	17	20	37	19	22	41	"	..	..	..	..
" Hills, L. C.....	18	21	39	18	16	34	1st Cl. M.	..	..	..	m	
" Johnson, R. B.....	14	14	28	18	18	36	"	..	..	..	..
" Pease, W. H.....	20	13	33	7	20	37	"	..	..	..	..
" Washburn, E. J.....	14	11	25	17	22	39	"	..	..	..	m	
" Williams, A. E.....	16	11	27	20	13	33	Marksmen.	..	..	..	..

COMPANY G.

Captain C. L. Bissell.....	21	23	44	21	22	43	X Sharps'r.	V 1c. m. '86 1st c. m. '87	1st c. m.	s	1st c. m.	
2d Lieut. W. B. Porter.....	21	25	46	21	20	41	V Sharps'r.	m '81 m '82	..	1st c. m.	1st c. m.	
1st Sergt. J. Marley.....	19	21	40	20	20	40	Sharps'r.	..	..	..	V 1st c. m.	
Q-M. Sgt. A. C. House.....	19	23	42	21	22	43	V Sharps'r.	1st c. m. '87	m	s	1st c. m.	
Sergeant W. J. Maxwell.....	13	15	28	16	16	32	Marksmen.	..	..	m	m	
Corporal R. Russell.....	19	16	35	18	18	36	1st Cl. M.	..	m	..	m	
" T. Nelson.....	20	22	42	15	15	30	Marksmen.	m. '85	..	..	m	
" J. Crockett.....	16	17	33	17	18	35	1st Cl. M.	..	..	..	m	
" J. Harrison.....	19	14	33	17	21	38	"	..	..	..	..
" D. C. Beebe.....	19	17	36	16	21	37	Marksmen.	..	..	..	..
Private Cheney, H. R.....	19	21	40	17	14	31	"	..	..	s	..	
" Keeney, H. W.....	16	19	35	21	20	41	Sharps'r.	..	..	..	..
" Magden P.....	19	19	38	20	22	42	X Sharps'r.	V s '85	1st c. m.	1st c. m.	1st c. m.	
" McCann, W. J.....	13	14	27	18	12	30	Marksmen.	1st c. m. '87	1st c. m.	1st c. m.	1st c. m.	
" Nichols, E. A.....	18	20	38	21	14	35	"	..	..	..	..
" McNary, G. F.....	17	13	30	20	18	38	1st Cl. M.	..	m	..	..
" Venart, T.....	15	23	38	19	15	34	Marksmen.	..	..	..	..

COMPANY H.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.				
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.	
Captain C. H. Patterson....	22	23	45	18	23	41	Sharps'r.	..	..	..	X s	
1st Lieut. W. Blevins.....	17	12	29	16	20	36	Marksman.	..	..	..	V 1st c. m.	
1st Sergeant A. M. Stratton..	17	10	27	17	19	36	V 1st Cl. M.	m '82 s '83 s '84 1st c. m. '85				
Sergeant O. P. Clark.....	21	7	28	17	18	35	1st Cl. M.	..	1st c. m.			
" G. L. Willey.....	18	9	27	15	19	34	Marksman.	..	m		s	
Corporal C. P. O'Neil.....	22	4	26	16	14	30	"	..	..	m	s	
" W. Redmond.....	19	6	25	16	18	34	"	..	..	
" W. E. Mahoney.....	19	8	27	21	17	38	1st Cl. M.	..	..	m	s	
" J. N. Lapointe.....	15	11	26	17	14	31	Marksman.	..	..	..	1st c. m.	
" J. D. Carter.....	18	8	26	17	14	31	"	..	..	..
" C. W. Camp.....	18	8	26	16	16	32	"	..	1st c. m.			
" F. L. Putnam.....	16	9	25	16	17	33	"	..	..	..	1st c. m.	
" W. A. Sparks.....	20	6	26	17	16	33	1st Cl. M.	V m '84				
Private Barchfield, J. G.....	17	8	25	20	17	37	"					
" Connolly, F. F.....	22	4	26	17	19	36	"					
" Calverley, A.....	18	8	26	19	17	36	"					
" Cudworth, H. J.....	18	7	25	13	21	34	Marksman.	..	..	m	1st c. m.	
" Corey, W. W.....	19	9	28	19	19	38	1st Cl. M.	V 1 c. m. '85				
" Evans, W. H.....	15	10	25	15	13	28	Marksman.	..	..	..	1st c. m.	
" Fricke, E. F.....	18	8	26	19	13	32	"	..	..	..
" Gaines, C. E.....	15	12	27	16	20	36	"	..	..	..	m	
" Goldson, J.....	20	5	25	18	18	36	1st Cl. M.	V s '83 s '84 s '85 V s '84				
" Horton, M. E.....	20	18	38	19	17	36	"					
" Kenney, P. E.....	18	10	28	14	19	33	Marksman.	..	m			
" Meara, J. O.....	17	8	25	15	18	33	"					
" Prindle, G. E.....	15	16	31	19	21	40	V Sharps'r.	m '82 m '83 s '84 m '85				
" Stone, H. M.....	18	7	25	14	19	33	Marksman.					
" Sullivan, D. F.....	16	10	26	17	19	36	1st Cl. M.	..	..	..	s	
" Taylor, G. W.....	15	10	25	15	19	34	Marksman.	..	..	..
" Wright, F. O.....	18	8	26	15	17	32	"	..	..	..	s	

COMPANY I.

1st Lieut. J. R. Andrews....	14	18	32	19	21	40	Sharps'r.					
2d Lieut. T. A. Stanley.....	18	13	31	16	22	38	Marksman.					
Sergeant A. G. Smith.....	24	2	26	18	18	36	1st Cl. M.					
Corporal H. S. Wetmore....	13	13	26	19	22	41	Sharps'r					
" A. V. Newcomb....	14	12	26	16	21	37	Marksman.					
" C. F. Erichson.....	15	14	29	18	15	33	"					
Musician E. J. Parmelee.....	16	12	28	18	19	37	1st Cl. M.					
Private Andruss, C. E. Jr....	21	5	26	17	14	31	Marksman.					
" Anderson, C. O.....	13	16	29	14	13	27	"					
" Butler, L. D.....	15	10	25	6	14	30	"					
" Johnson, C. E.....	13	13	26	14	14	28	"					
" Judd, A. S., Jr.....	15	11	26	20	14	34	"					
" Knight, S.....	17	13	30	15	16	31	"					
" Walter, H. J.....	16	11	27	14	13	27	"					

COMPANY K.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.			
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.
Captain C. H. Slocum.....	19	7	26	20	20	40	X Sharps'r.	V m '84 1st c. m. '86	1st c. m.	m	s
1st Lieut. H. H. Saunders...	20	7	27	19	21	40	Sharps'r.		..	..	X s
2d Lieut. E. H. Waterman...	17	9	26	17	13	30	Marksman.	V m '85	..	..	m
Q.-M Sgt N. G. Valentine...	19	10	29	19	17	36	1st Cl. M.	m '87	m	..	1st c. m.
Sergeant W. F. Buckingham	20	9	29	17	15	32	Marksman.	..	..	..	m
" R. E. H. Birney.....	14	13	27	15	19	34	"	m '87	..	m	m
Corporal L. Gundlach, Jr....	15	11	26	14	17	31	"	..	..	..	m
" E. E. Moseley.....	16	11	27	14	15	29	"	..	..	..	..
" E. C. Wander.....	17	11	28	14	13	27	"	..	m	m	m
" S. G. Huntington.....	20	8	28	14	13	27	"	..	..	m	1st c. m.
" D. S. Morrell.....	20	7	27	16	15	31	"	..	..	m	m
" W. C. Prescott.....	17	9	26	13	17	30	"	..	..	..	..
Trump'r F. M. Barnes.....	18	9	27	14	13	27	"	..	..	..	..
Musician J. T. Sherman, Jr..	14	15	29	14	18	32	"	..	..	..	1st c. m.
Private Burnham, H. M.....	14	12	26	14	15	29	"	..	..	..	m
" Chapman, H. W.....	18	9	27	18	13	31	"	..	..	..	..
" Case, F. E.....	20	11	31	13	21	34	"	..	..	..	..
" Clark, G. D.....	14	12	26	17	16	33	1st Cl. M.	..	..	..	..
" Delamater, R. W.....	14	13	27	15	14	29	Marksman.	..	..	..	1st c. m.
" Fenn, C. W.....	18	10	28	16	19	35	"	..	..	..	..
" Gilmore, C. J.....	16	9	25	15	14	29	"	..	..	..	..
" Hills, F. R.....	18	11	29	15	16	31	"	..	..	..	..
" Hardin, C. J.....	18	10	28	14	16	30	"	..	..	..	..
" Morrell, J. W.....	18	10	28	14	13	27	"	..	..	m	m
" Morley, F. A.....	16	11	27	13	15	28	"	..	..	..	..
" Parks, C. W.....	17	9	26	13	14	27	"	..	..	..	..
" Rommel, J. W.....	16	11	27	13	17	30	"	..	..	..	..
" Thayer, G. B.....	19	8	27	16	16	32	"	..	..	..	..
" Way, L. M.....	19	8	27	14	15	29	"	..	..	..	1st c. m.
" Whiting, A. L.....	17	10	27	16	14	30	"	..	..	m	..
" Whiton, R. P.....	16	10	26	13	17	30	"	..	..	..	m

FIRST SIGNAL CORPS.

1st Lieut. H. A. Giddings....	17	9	26	19	21	40	Sharps'r.	1st c. m. '87	m	..	s
Sergeant A. B. Jenkins.....	19	8	27	20	22	42	"	..	..	m	s
Corporal C. P. Carter.....	14	12	26	20	22	42	"	..	..	m	s
" F. G. Blakeslee.....	20	5	25	18	14	32	Marksman.	..	..	..	s
Private Bramley, W. G.....	14	12	26	15	17	32	"	..	..	..	m

FIRST MACHINE-GUN PLATOON.

Corporal W. Nish.....	20	7	27	14	19	33	Marksman.	..	..	..	m
Private Dalton, R. J.....	16	10	26	17	21	38	1st Cl. M.	..	..	..	..

SECOND REGIMENT.

FIELD, STAFF, AND NON-COMMISSIONED STAFF.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.				
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.	
Colonel J. B. Doherty.....	17	18	35	20	20	40	Sharps'r.	..	..	V s	1st c. m.	
Captain A. M. Dickinson, Adj.	14	15	29	20	20	40	"	..	..	m	1st c. m.	
Major J. M. Benedict, Surg.	17	15	32	21	24	45	"	..	m	m	1st c. m.	
Captain C. C. Ford, I. R. P.	20	21	41	20	24	44	"	..	..	..	V s	
1st Lieut. W. G. Daggett, Asst. Surg.....	17	18	35	18	17	35	1st Cl. M.	..	..	1st c. m.	1st c. m.	
Sergt. Maj. H. B. Carter.....	16	17	33	21	20	41	Sharps'r.	..	V s	1st c. m.	s	
Com. Sergt. H. P. Vibert, Jr.	17	16	33	20	21	41	"	..	..	X s	1st c. m.	
Hosp. St'w'd W. N. Barber...	18	18	36	21	22	43	"	..	V s	s	s	

COMPANY A.

Captain W. E. Moses.....	22	4	26	19	21	40	V Sharps'r.	s '87	m	m	m	
1st Lieut. C. W. Burpee.....	14	12	26	18	18	36	1st Cl. M.	..	m	..	m	
2d Lieut. E. Hart.....	14	11	25	18	15	33	Marksman.	..	..	..	V s	
1st Sergt. W. H. Claxton.....	18	8	26	20	22	42	Sharps'r.	..	..	..	1st c. m.	
Q. M. Sgt. E. J. Schnyler.....	21	19	40	17	19	36	1st Cl. M.	..	..	V m	m	
Sergeant W. A. Goldsmith.....	20	7	27	18	16	34	"	..	..	V s	1st c. m.	
" J. Geddes.....	17	9	26	16	16	32	Marksman.	..	m	m	m	
" H. C. Cady.....	17	8	25	16	13	29	"	..	m	..	m	
Corporal F. C. Boden.....	14	13	27	16	17	33	"	..	..	m	m	
Private Bigelow, W. A.....	24	4	28	18	17	35	V 1st Cl. M.	m '87	m	m	s	
" Brown, G. W.....	18	8	26	13	14	27	V Marks'n.	m '87	m	1st c. m.	m	
" Carter, E. L.....	15	10	25	17	21	38	1st Cl. M.	..	..	..	1st c. m.	
" Dewitt, E. E.....	16	17	33	15	19	34	Marksman.	..	..	..	m	
" Herman, C. F.....	18	9	27	18	16	34	1st Cl. M.	..	..	..	m	
" Humphrey, C. H.....	17	10	27	18	13	31	Marksman.	..	..	..	1st c. m.	
" Jones, W. W.....	15	15	30	18	13	31	"	..	..	..	m	
" March, J. E.....	19	17	36	16	13	29	"	..	m	..	m	
" Miller, D.....	15	10	25	16	18	34	"	..	..	..	m	
" Petitjean, G. E.....	21	8	29	17	18	35	1st Cl. M.	..	1st c. m.	m	m	
" Penckoek, J. M.....	17	11	28	13	14	27	Marksman.	..	..	..	m	
" Ross, C. H.....	19	8	27	13	14	27	"	..	..	..	1st c. m.	
" Smith, C. W.....	13	13	26	16	18	34	"	..	..	..	m	
" Stanley, J. L.....	14	14	28	16	13	29	"	..	..	..	m	

COMPANY B.

1st Sergt. A. F. Landensack..	21	23	44	22	23	45	Sharps'r.	s '87	..	s	s	
Corporal W. W. Gadd.....	19	17	36	19	18	37	1st Cl. M.	..	..	..	V s	
Private Keller, F.....	16	14	30	16	14	30	Marksman.	..	..	..	m	

COMPANY C.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.			
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1873-87.	1888.	1889.	1890.
Captain M. Creed	22	21	43	22	18	40	Sharps'r.	V 1st c.m. '86	s	s	s
1st Lieut. J. J. Kennedy	20	21	41	20	18	38	1st Cl. M.	..	V 1st c.m.	s	s
Corporal W. P. Gilligan	17	16	33	16	17	33	Marksman.	..	m	1st c. m.	1st c. m.
" D. F. Flynn	21	23	44	17	19	36	1st Cl. M.	..	..	1st c. m.	..
" W. A. Regan	15	15	30	20	13	33	Marksman.	..	..	..	s
Private Callahan, R. M.	18	18	36	19	19	38	1st Cl. M.	..	..	..	..

COMPANY E.

Captain F. L. Lehr	1	14	29	14	13	27	Marksman.	..	m	..	m
1st Sergt. C. S. Shappa	18	13	31	17	20	37	1st Cl. M.	..	..	V 1st c.m.	s
Corporal J. W. Landon	15	20	35	18	26	38	"	..	..	V s	s
" H. F. Howd	17	17	34	18	16	34	"	..	..	..	..
" J. E. James	14	13	27	14	14	28	V Marks'n.	m '87	m	m	1st c. m.
Private Bailey, T. D.	14	14	28	14	15	29	Marksman.	..	..	..	..

COMPANY F.

Captain B. E. Brown	20	13	33	19	19	38	1st Cl. M.	..	..	m	s
1st Lieut. C. F. McCabe	16	15	31	19	16	35	"	..	..	..	V 1st c.m.
2d Lieut. C. B. Dann	14	15	29	19	14	33	V Marks'n.	m '87	s	1st c. m.	s
1st Sgt. C. Smith	17	13	30	21	19	40	Sharps'r.	..	..	V m	1st c. m.
Q.-M.Sgt. A. Husted	14	20	34	17	18	35	V 1st Cl. M.	m '86	1st c. m.	1st c. m.	..
Sergeant J. McCann	14	13	27	20	23	43	V Sharps'r.	1st c.m.'87	1st c. m.	m	1st c. m.
" E. O. Gruener	14	14	28	18	16	34	1st Cl. M.	m '87	1st c. m.	..	m
Corporal J. H. Cannon	15	10	25	21	14	34	Marksman.	1st c.m.'87	..	..	m
" F. F. Norman	13	13	26	15	18	33	"	..	..	m	..
" J. R. Ruff	13	15	28	17	21	38	1st Cl. M.	..	..	m	m
" E. L. Isbell	16	20	36	17	22	39	"	..	..	1st c. m.	1st c. m.
" J. H. Griffin	14	14	28	19	16	35	"	..	..	m	m
Musician J. N. Champion	18	19	37	18	17	35	"	V s '87	s	s	s
" C. L. Gaylord	13	13	26	15	17	32	Marksman.	..	..	m	m
Private Bassett, C. F.	13	14	27	13	16	29	"	..	..	..	..
" Bassett, T. A.	17	13	30	17	13	30	"	..	..	..	..
" Beach, F. G.	16	12	28	17	16	33	1st Cl. M.	..	..	..	..
" Clark, C. W.	19	13	32	18	17	35	"	..	..	..	..
" Crampton, W. I.	15	13	28	17	17	34	"	..	..	1st c. m.	1st c. m.
" Gruener, H. W.	14	13	27	13	13	26	Marksman.	..	..	..	..
" Hammond, L. R.	14	15	29	18	15	33	V Marks'n.	s '87	1st c. m.	m	1st c. m.
" Hatch, F. L.	13	12	25	18	17	35	1st Cl. M.	..	..	..	..
" Ingersoll, C. A.	15	15	30	20	15	35	Marksman.	..	..	..	..
" Lewis, C. R.	14	14	28	17	13	30	"	..	..	..	..
" Lowe, J. W.	14	13	27	15	21	36	"	..	..	..	m
" Osborn, M. E.	13	14	27	17	21	38	1st Cl. M.	..	..	..	..
" Schwab, J. C.	19	17	36	17	19	36	"	..	..	..	..
" Smith, H. A.	13	13	26	20	21	41	Sharps'r.	..	..	..	..
" Somers, C. B.	14	14	28	17	15	32	Marksman.	..	..	..	..
" Steele, D.	13	16	29	17	20	37	1st Cl. M.
" Trowbridge, T.	14	14	28	14	16	30	Marksman.
" Townsend, J. H.	13	13	26	13	13	26	"

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COMPANY G.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.				
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.	
1st Lieut. D. E. Fitzpatrick..	24	13	37	17	15	32	V Marks'm.	1st c. m. '87	1st c. m.	m	1st c. m.	
2d Lieut. P. Halpin.....	19	16	35	17	14	31	Marksman.	..	m	..	1st c. m.	
1st Sergt. W. T. Keavney....	15	17	32	16	17	33	..	..	..	m	1st c. m.	
Sergeant T. F. Hallinan.....	13	15	28	18	20	38	1st Cl. M.	..	..	..	1st c. m.	
" B. Collins.....	23	11	34	17	18	35	..	..	1st c. m.	m	m	
Musician J. F. Flaherty....	19	16	35	15	14	29	Marksman.	..	m	m	m	
Private Carroll, W. H.....	15	14	29	15	17	32	..	..	..	..	1st c. m.	
" Dillon, J.....	15	11	26	13	21	34	..	..	..	..	m	
" Lynehan, W. H.....	18	15	33	14	16	30	..	..	..	..	m	
" Lawler, T. F.....	20	19	39	16	15	31	..	..	..	m	m	
" McDonald, J.....	15	17	32	16	16	32	..	..	..	m	m	

COMPANY H.

2d Lieut. J. T. Elliott.....	21	5	26	15	16	31	Marksman.	..	..	..	X s	
1st Sergt. W. R. Markham...	17	10	27	15	14	29	"	m '86	..	..	1st c. m.	
Sergeant G. H. Kavanagh....	19	8	27	18	17	35	1st Cl. M.	1st c. m. '87	V m	m	1st c. m.	
Corporal O. H. Wells.....	19	8	27	19	16	35	..	..	..	..	m	
" J. A. Broatch.....	20	8	28	18	13	31	Marksman.	..	..	..	1st c. m.	
" E. A. Sherman.....	18	15	33	18	16	34	1st Cl. M.	..	..	..	m	
Trump'r C. W. Deming.....	16	11	27	15	18	33	Marksman.	..	..	..	..
Private Allen, G. I.....	15	12	27	13	17	30	..	..	..	..	..
" Babcock, W. E.....	15	10	25	13	15	28	"	..	..	..	m	
" Cone, J. J., Jr.....	21	5	26	18	13	31	"	..	..	..	..
" Durie, A., Jr.....	15	11	26	13	15	28	"	..	..	..	..
" Hubbard, R.....	17	11	28	16	21	37	"	..	..	..	m	
" Hughes, T. J.....	17	8	25	17	17	34	1st Cl. M.	..	..	..	..
" Hughes, J. J.....	13	13	26	19	16	35	"	..	..	..	..
" Mowry, E. S.....	20	6	26	18	18	36	"	..	..	..	..

COMPANY I.

Captain C. B. Bowen.....	15	14	29	21	20	41	Sharps'r.	..	..	V s	s	
1st Lieut. C. R. Darnstadt...	16	22	38	18	18	36	1st Cl. M.	V m '85	1st c. m.	s	s	
2d Lieut. O. L. Bradley.....	17	19	36	21	20	41	V Sharps'r.	m '80	1st c. m.	s	s	
1st Sergt. P. T. Vibert.....	15	18	33	14	13	27	Marksman.	..	m	m	m	
Q.-M.Sgt. J. C. Booth.....	16	21	37	17	17	34	X 1st Cl. M.	V m '82	1st c. m.	m	s	
Sergeant J. T. Walker.....	13	15	28	14	13	27	Marksman.	..	m	m	m	
" G. E. Withey, Jr.....	15	17	32	19	17	36	1st Cl. M.	..	..	V 1st c. m.	s	
" D. R. Jones.....	18	18	36	17	20	37	"	..	m	1st c. m.	m	
Corporal W. H. Rees.....	14	15	29	13	13	26	Marksman.	..	..	m	m	
" J. E. Bowen.....	13	14	27	18	17	35	1st Cl. M.	..	..	1st c. m.	s	
Private Beal, J. J.....	17	24	41	21	21	42	Sharps'r.	..	m	1st c. m.	s	
" Banks, J. W.....	15	14	29	15	16	31	Marksman.	..	..	..	m	
" Burr, W. W.....	13	15	28	14	13	27	"	..	..	m	m	
" Cadwell, E. E.....	13	14	27	15	14	29	"	..	..	..	..
" Clark, J. R.....	13	14	27	13	14	27	"	..	..	m	m	
" Darnstadt, H. J.....	18	14	32	18	15	33	"	..	..	1st c. m.	1st c. m.	
" Ford, D. E.....	14	13	27	14	13	27	"	..	..	m	..	
" Koschubey, A. A.....	16	16	32	13	13	26	"	..	..	..	..
" Martindale, A. S.....	17	19	35	13	13	26	"	..	..	m	m	
" McIntyre, D.....	15	13	28	15	14	29	"	..	..	..	m	
" Mansfield, E. A.....	18	17	35	13	16	29	"	..	..	..	m	
" Prondman, G. E.....	15	15	30	18	13	31	"	..	..	..	m	
" Phillips, F. E.....	14	14	28	14	13	27	"	..	..	..	1st c. m.	
" Peer, L. B.....	16	17	33	13	14	27	"	..	..	..	m	
" Reynolds, G. A.....	15	18	33	13	14	27	"	..	..	..	m	
" Rice, W. B.....	13	15	28	13	13	26	"	..	..	..	m	
" Rule, J. T.....	20	13	33	14	15	29	"	..	..	..	..
" Sembler, H. F.....	18	13	31	15	13	28	"	..	..	..	m	
" Woodworth, S. B.....	19	17	36	21	17	38	1st Cl. M.	..	..	m	m	

ADJUTANT-GENERAL'S REPORT.

COMPANY K.

NAME.	2d Class.			1st Class.			Designa- tion.	Previous Qualifications.				
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.	
Captain G. G. LaBarnes.....	22	24	46	20	23	43	Sharps'r.	X s '87	s	s	s	
1st-Lieut. R. E. Hall.....	17	22	39	15	14	29	Marksman.	..	..	V 1st c. m.	1st c. m.	
Q. M. Sgt. T. Mottram.....	19	21	40	16	17	33	Marksman.	..	..	..	V s	
Sergeant Z. P. Beach.....	20	22	42	18	20	38	1st Cl. M.	X s '87	s	s	e	
" A. W. Bevan.....	18	14	32	17	19	37	1st Cl. M.	..	m	1st c. m.	s	
Corporal J. W. Newton.....	16	19	35	18	17	35	"	..	..	m	1st c. m.	
" F. E. Blake.....	15	14	29	21	16	36	"	..	..	..	m	
Musician E. M. LaBarnes.....	14	13	27	14	23	37	Marksman.	..	..	..	..
Private Toelle, W. E.....	17	18	35	22	22	44	Sharps'r.	..	..	..	..
" McCune, D. D.....	19	20	39	18	19	37	V 1st Cl. M.	1st c. m. '87	1st c. m.	1st c. m.	1st c. m.	

SECOND SIGNAL CORPS.

1st Lieut. F. J. Duffy.....	16	19	35	22	20	42	Sharps'r.	V s '87	s	..	s	
Corporal J. T. Sutcliffe.....	18	15	33	16	13	29	Marksman.	m '86	..	..	1st c. m.	
Private Dewey, A. L.....	13	15	28	17	17	34	1st Cl. M.	..	..	..	..
" Bittner, M. G.....	14	15	29	13	14	27	Marksman.	..	..	..	..
" Welch, W. L.....	17	13	30	14	13	27	"	..	..	..	..

THIRD REGIMENT.

FIELD, STAFF, NON-COMMISSIONED STAFF, AND HOSPITAL CORPS.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.				
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1891.	1878-87.	1888.	1889.	1890.
Colonel George Haven.....	16	18	34	19	21	40	Sharps'r.	..	..	V s	s	s
Lieut.-Col. H. B. Smith.....	14	21	35	19	21	40	..	..	..	..	..	V s
Major W. F. Bidwell.....	15	15	30	17	16	33	1st Cl. M.	V 1st c. m.	1st c. m.	1st c. m.	1st c. m.	1st c. m.
Major L. B. Almy, Surgeon..	16	12	28	18	15	33	Marksman.	m '86	m	..	..	1st c. m.
Capt. Geo. M. Cole, Adj't.....	22	21	43	20	22	42	Sharps'r.	..	..	V s	s	s
Capt. T. H. Allen, I. R. P....	21	19	40	20	21	41	..	..	V s	s	s	s
1st Lieut. J. La Pierre, Asst. Surg.....	21	14	35	18	20	38	1st Cl. M.	..	..	..	..	m
Com. Serg't. F. H. Morgan....	16	13	29	19	16	35	..	..	m	1st c. m.	1st c. m.	1st c. m.
Hosp. St'w'd F. D. Sevin.....	18	10	28	15	16	31	Marksman.	..	..	..	..	m
Act'g Hosp. St'w'd C.S. Eaton	21	23	44	18	14	32	..	..	..	..	..	m

COMPANY A.

1st Lieut. H. S. Dorsey.....	16	18	34	22	16	38	1st Cl. M.	..	..	..	m	1st c. m.
Sergeant J. H. Newman.....	16	17	33	16	15	31	Marksman.	..	..	..	..	1st c. m.
" D. P. Hoare.....	15	17	32	16	14	30	..	..	..	..	..	1st c. m.
Corporal W. H. Farrell.....	18	11	29	19	17	36	1st Cl. M.	..	..	..	..	s
Private Lyon, J. P.....	15	14	29	15	14	29	Marksman.	..	..	..	..	..

COMPANY B.

Captain D. Keleher.....	17	14	31	21	21	42	Sharps'r.	V 1st c. m.	1st c. m.	s	s	s
1st Lieut. C. Bransfield.....	18	14	32	21	23	44	"	V m '86	..	1st c. m.	s	s
2d Lieut. W. Fitzgerald.....	13	20	33	19	19	38	V 1st Cl. M.	m '86 '87	..	1st c. m.	s	s
1st Serg't. J. F. Murphy.....	17	19	36	21	20	41	Sharps'r.	..	..	m	m	m
Q.-M.Sgt. R. J. Rooney.....	15	13	28	14	14	28	Marksman.	..	..	m	m	1st c. m.
Sergeant J. J. Traut.....	19	16	35	16	17	33	"	m '87	..	..	..	..
" M. W. Flynn.....	14	16	30	17	19	36	1st Cl. M.	..	..	m	m	m
" A. C. Morrison.....	16	21	37	21	20	41	Sharps'r.	..	..	m	m	m
Corporal W. O'Keefe.....	18	16	34	20	20	40	"	..	..	m	m	m
" D. F. Connell.....	15	12	27	13	13	26	Marksman.	..	..	..	..	..
" M. J. Donohue.....	14	13	27	15	13	28	"	..	..	..	..	..
" T. J. Donohue.....	16	16	32	17	16	33	1st Cl. M.	..	..	m	1st c. m.	1st c. m.
" M. F. O'Connell.....	16	13	29	20	20	40	Sharps'r.	..	..	m	s	s
" P. King.....	18	11	29	17	17	34	1st Cl. M.	..	..	..	..	..
Trump'r J. McKnight.....	14	16	30	13	14	27	Marksman.	..	..	..	..	..
Private Cella, J. F.....	16	12	28	14	13	27	"	..	..	..	..	..
" Conroy, J.....	18	10	28	19	17	36	1st Cl. M.	..	..	m	m	m
" Fisher, W. T.....	14	14	28	17	20	37	"	..	..	..	..	..
" Fogarty, W. A.....	17	8	25	16	18	34	Marksman.	..	..	..	..	..
" Gavitt, I. F.....	16	17	33	17	18	35	1st Cl. M.	..	..	..	..	..
" Girven, J.....	17	8	25	14	16	30	Marksman.	..	..	m	..	..
" Mulcaby, T.....	17	16	33	14	15	29	"	..	..	..	..	..
" Neville, P. J.....	16	13	29	14	18	32	"	..	..	..	..	..
" Neville, M. J.....	13	13	26	17	15	32	"	..	..	..	..	..
" O'Connell, D.....	15	11	26	17	14	31	"	..	..	..	..	..
" Rattigan, L.....	13	14	27	14	14	28	"	..	..	..	..	..
" Shea, James F.....	18	19	37	18	15	33	"	..	..	..	..	..
" Shea, John T.....	18	16	34	13	14	27	"	..	..	..	..	..
" Sullivan, M. J.....	13	14	27	16	17	33	"	..	..	..	..	m

COMPANY C.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.			
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.
Captain F. A. Fox.....	19	8	27	12	21	29	1st Cl. M.	m '87	m	..	m
1st Lieut. A. S. Howard.....	15	16	31	15	17	32	Marksman.	1st c. m. '85	..	..	m
Q.-M. Sgt. H. B. Hatton.....	21	20	41	21	23	44	X Sharps'r.	m '86 m '87	1st c. m.	1st c. m.	1st c. m.
Sergeant C. S. Bennett.....	15	14	29	18	16	31	1st Cl. M.	..	m	m	m
Corporal J. A. Hagberg.....	15	19	34	19	16	35	..	..	..	m	m
Private Brewster, B. F.....	17	10	27	13	16	29	Marksman.	..	..	..	m
“ Church, C. W.....	11	18	35	14	13	27	..	..	..	..	m
“ Glassbruner, W.....	19	18	37	17	21	38	1st Cl. M.	..	..	..	m
“ Gembel, J.....	13	14	27	16	17	33	Marksman.	..	..	..	m
“ Hagberg, C. A.....	22	17	39	19	20	39	1st Cl. M.	..	..	m	m
“ Kelley, W. H.....	24	16	36	14	14	28	Marksman.	..	..	..	m
“ McClimon, W. A.....	23	20	43	14	15	29	..	..	..	..	m
“ Morrison, J.....	17	13	28	17	14	31	..	..	..	..	m
“ Perkins, C. L.....	24	14	38	17	14	32	..	..	m	m	1st c. m.
“ Perkins, F. R.....	13	16	29	18	18	36	1st Cl. M.	..	..	..	m
“ Pierce, W. W.....	17	14	31	20	13	33	Marksman.	..	..	..	m
“ Sourbier, E.....	13	13	26	14	15	29	..	..	..	..	m
“ Stamm, J. W.....	15	14	29	14	15	29	..	..	..	..	m
“ Swahn, J. M.....	24	19	43	17	17	34	1st Cl. M.	..	..	..	m
“ Tourtellotte, F.....	14	12	26	18	15	33	Marksman.	..	..	..	m

COMPANY D.

Captain T. O. Thompson...	22	25	47	20	23	43	V Sharp's'r.	m '82 '83 '84			
1st Lieut. D. Conner.....	23	20	43	20	20	40	Sharps'r.	s '85	..	V s	s
2d Lieut. W. R. Beach.....	22	22	44	17	20	37	1st Cl. M.	..	1st c. m.	1st c. m.	1st c. m.
1st Sergt. L. A. Waley.....	18	16	34	18	20	38	..	..	V 1st c. m.	1st c. m.	1st c. m.
Q.-M. Sgt. E. L. Crowell.....	18	21	39	21	21	42	X Sharps'r.	V s '86 s '87	s	s	s
Sergeant F. W. Rogers, Jr..	13	12	25	16	19	35	Marksman.	..	..	m	m
Corporal C. H. Thompson...	20	14	34	18	18	36	1st Cl. M.	..	..	..	..
“ G. B. Gilbert.....	22	15	37	19	23	42	Sharps'r.	..	..	..	..
Musician F. W. Fisher.....	19	6	25	14	15	29	Marksman.	m '87	..	..	..
Private Bliven, M. R.....	13	12	25	16	19	35	..	..	..	..	..
“ Cone, F.....	20	20	40	16	19	35	..	..	..	..	..
“ Eaton, H. L.....	18	8	26	17	19	36	1st Cl. M.	..	..	..	..
“ Gavitt, G. A.....	17	11	28	17	15	32	Marksman.	..	..	..	..
“ Maynard, A. E.....	15	13	28	17	20	37	1st Cl. M.	..	..	..	..
“ McGlaflin, G. W.....	22	18	40	19	13	32	Marksman.	..	..	..	..
“ Rogers, I. M.....	19	14	33	15	13	28	..	..	..	..	..
“ Russell, H. E.....	17	16	33	18	15	33	..	..	..	..	..
“ Stanton, W. R.....	19	19	38	17	21	38	V 1st Cl. M.	1st c. m. '85 m '87	1st c. m.	1st c. m.	..
“ Talbot, J. F.....	13	14	27	17	24	41	Sharps'r.	..	..	..	..
“ White, W. H.....	14	14	28	13	13	26	Marksman.	..	..	..	..

COMPANY E.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.				
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1873-87.	1888.	1889.	1890.	
Captain J. H. Morrison.....	17	12	29	17	18	35	V 1st Cl. M.	m '85 m '87		1st c. m.	1st c. m.	
1st Lieut. M. Heffernan.....	15	12	27	18	20	38	1st Cl. M.	m '86		..	1st c. m.	1st c. m.
2d Lieut. J. T. Lynch.....	13	14	27	17	17	34	"		..	1st c. m.	1st c. m.	
1st Sergt. J. Cochrane.....	20	11	31	20	22	42	V Sharps'r.	m '87	1st c. m.	1st c. m.	s	1st c. m.
Corporal J. Connors.....	19	10	29	17	18	35	1st Cl. M.	..	m	m		1st c. m.
Private Barrows, J. W.....	14	12	26	19	18	37	"					
" Brewer, J. B.....	14	17	31	15	15	30	Marksmen.					
" Mills, A. McF.....	15	15	30	16	14	30	"					
" Malone, W.....	15	16	31	15	16	31	"					
" Vanamburgh, P.....	18	18	36	18	22	40	Sharps'r.	..	..	m		
" Walsh, W. H.....	14	16	30	17	13	30	Marksmen.					

COMPANY F.

Captain J. Armstrong.....	15	11	26	14	14	28	V Marks'n.	m '87	m	1st c. m.	1st c. m.	
1st Sergt. J. McManus.....	21	17	38	15	13	28	Marksmen.	..	..	m	1st c. m.	1st c. m.
Sergeant J. Sullivan.....	24	2	26	17	21	38	1st Cl. M.	..	..	1st c. m.	1st c. m.	
Corporal J. F. McGuire.....	13	13	26	14	19	33	Marksmen.	..	..	1st c. m.	m	
Private Caffrey, T.....	14	15	29	16	20	36	"					

COMPANY G.

Captain H. J. Thayer.....	22	19	41	14	22	36	Marksmen.	..	..	V 1st c. m.	1st c. m.	
2d Lieut. C. A. Winslow.....	21	17	37	21	14	35	"	m '86	s	1st c. m.		
1st Sergt. C. E. Richardson..	21	8	29	18	14	32	V Marks'n.	m '85 m '87	m	m		
Sergeant M. Kilborn.....	19	20	39	16	17	33	Marksmen.	..	m	1st c. m.	1st c. m.	
Corporal A. D. McIntyre.....	21	15	36	21	21	42	V Sharps'r.	1st c. m '87	1st c. m.	s	1st c. m.	
" B. K. Smith.....	15	16	31	15	21	36	Marksmen.	..	..	..	m	
" A. R. Cole.....	20	20	40	17	16	33	1st Cl. M.	..	..	V m	1st c. m.	
Private Clark, G. A.....	21	16	37	19	15	34	Marksmen.	..	..	m		
" Hill, W.....	14	19	33	14	21	35	"					
" Hopkins, G. S.....	21	13	34	16	19	35	"					
" Kilborne, W. E.....	18	18	36	17	15	32	"					
" Williams, L. H.....	22	12	34	19	25	44	Sharps'r.					

ADJUTANT-GENERAL'S REPORT.

COMPANY I.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.			
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.
Captain G. W. Metcalf.....	22	19	41	19	21	40	X Sharps'r.	V s '86 s '87	s	s	s
1st Lieut. S. Prince.....	17	15	32	17	18	35	1st Cl. M.	..	..	..	V s
2d Lieut. C. A. Miner.....	23	23	46	22	21	43	Sharps'r.	..	V s	s	s
1st Sergt. W. H. Crowell.....	16	19	35	18	17	35	1st Cl. M.	..	..	V 1st c. m.	s
Q-M. Sgt. G. T. Benham.....	15	14	29	14	14	28	Marksman.	..	..	1st c. M.	m
Sergeant F. J. Whitman.....	18	23	41	19	16	35	1st Cl. M.	..	..	V s	1st c. m.
" E. Monroe.....	14	14	28	18	19	37	V 1st Cl. M.	1st c. m. '87	1st c. m.	1st c. m.	1st c. m.
" R. B. James.....	13	14	27	16	14	30	Marksman.	..	..	m	m
Corporal J. Rockholz.....	22	21	43	21	21	42	Sharps'r.	..	..	1st c. m.	s
" J. T. Sherw n.....	23	22	45	21	21	42	..	..	..	s	s
" C. G. Newbury.....	13	14	27	17	18	35	1st Cl. M.	..	..	..	1st c. m.
" W. Cann, Jr.....	17	15	32	17	18	35	"	..	..	..	1st c. m.
" L. J. Egan.....	14	16	30	16	17	33	Marksman.	..	..	1st c. m.	m
Private Broadwell, J. H.....	14	18	32	18	22	40	Sharps'r.	..	..	..	m
" Daniels, G. L.....	14	15	29	14	14	28	Marksman.	..	..	..	m
" Dunbar, R. W.....	16	9	25	15	13	28	"	..	..	..	m
" Elliot, F. E.....	21	14	35	17	18	35	1st Cl. M.	..	..	..	m
" Fox, G. J.....	23	20	43	21	23	44	Sharps'r.	..	..	1st c. m.	s
" Fox, M. E.....	15	19	34	20	19	39	1st Cl. M.	..	..	..	..
" Malona, J. A.....	20	22	42	22	23	45	Sharps'r.	V s '87	s	s	s
" McManus, T.....	15	18	33	15	14	29	Marksman.	..	..	..	..
" Newbery, H.....	14	15	29	15	18	33	"	..	..	..	m
" Pincus, E. H.....	14	17	31	17	20	37	"	..	..	..	1st c. m.
" Phillips, J. D.....	19	13	32	16	15	31	"	..	m	s	m
" Phillips, L.....	23	14	37	19	21	40	V Sharps'r.	1st c. m. '87	s	s	s
" Rogers, A. D.....	17	20	37	17	15	32	Marksman.	..	1st c. m.	m	m
" Starr, L. H.....	18	14	32	17	13	30	"	..	..	1st c. m.	1st c. m.
" Shelley, O. W.....	18	15	33	15	14	29	"	..	..	..	m
" Shelley, W.....	20	16	36	15	21	36	"	..	..	..	..
" Stoddard, J. C.....	15	13	28	14	14	28	"	..	..	..	..
" Warren, C. E.....	22	22	44	20	22	42	Sharps'r.	..	1st c. m.	1st c. m.	s
Williams, J.....	13	15	28	17	14	31	Marksman.	..	..	..	..

THIRD SIGNAL CORPS.

1st Lieut. A. C. Ghyser.....	14	13	27	22	16	38	1st Cl. M.	m '87			
Private Douglass, F. E. G....	19	19	38	16	19	35	Marksman.				
" Ketchum, F. M....	16	10	26	15	18	33	"				

THIRD MACHINE-GUN PLATOON.

2d Lieut. H. L. Starr.....	18	19	37	22	16	38	1st Cl. M.	..	..	1st c. m.	
Sergeant F. W. Ryley.....	15	19	34	19	18	37	"	..	..	..
Corporal J. N. Elliott.....	16	15	31	19	15	34	Marksman.	..	..	1st c. m.	
Private Saxton, W. H., Jr.....	19	19	38	17	15	32	"				
" Starr, V. W.....	20	15	35	14	18	32	"				
" Williams, G.....	18	15	33	14	13	27	"				

FOURTH REGIMENT.

FIELD AND STAFF.

NAME.	2d Class.			1st Class.			Designation.	Previous Qualifications.				
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.	
Lt. Col. J. C. Crowe.....	19	12	31	17	19	36	1st Cl. M.	..	V 1st c. m.	s	s	
Major G. W. Cornell.....	20	18	38	20	16	36	"	X s '87	s	s	s	
Major C. C. Godfrey, Surgeon.	23	21	44	19	22	41	Sharps'r.	..	..	..	s	
Captain E. Finn, Adjutant....	19	22	41	19	21	40	V Sharps'r.	m '79	..	..	s	
								s '86 s '87	..	..	..
Capt. J. D. Goulden, I. R. P..	13	19	32	17	14	31	Marksman.	..	..	..	m	

COMPANY B.

Captain G. P. Sanger.....	20	18	38	18	20	38	1st Cl. M.	V s '87	..	s	s	
1st Lieut. F. V. Gilhuley.....	19	14	33	17	18	35	"	V m '86	..	1st c. m.	s	
2d Lieut. M. F. White.....	21	16	37	21	20	41	Sharps'r.	..	V s	s	s	
Q.-M.Sgt. M. M. Green.....	19	22	41	20	17	37	V 1st Cl. M.	s '87	1st c. m.	1st c. m.	s	
Sergeant B. Monahan.....	19	20	39	17	21	38	"	1st c. m. '87	s	s	s	
" W. Houlihan.....	18	20	38	20	21	41	Sharps'r.	..	..	..	V s	
" W. E. Rowe.....	15	20	35	19	19	38	1st Cl. M.	..	..	1st c. m.	s	
Corporal C. A. Bradley.....	20	14	34	17	21	38	"	..	..	s	1st c. m.	
Private Loth, R.....	17	15	32	17	16	33	"	..	..	..	m	
" Morgan, H. R.....	15	16	31	19	19	38	"	..	..	..	m	
" Romaine, M. B.....	20	21	41	20	21	41	Sharps'r.	..	..	..	V 1st c. m.	

COMPANY C.

Captain C. W. Hendrie.....	21	19	40	22	22	44	Sharps'r.	..	..	..	V s	
1st Sergt. H. C. Stockwell....	20	22	42	21	22	43	V Sharps'r.	s '87	..	s	s	
Sergeant A. E. Johnson.....	18	14	32	21	20	41	"	s '87	s	s	1st c. m.	
Corporal L. D. Rhinehart.....	13	14	27	14	17	31	Marksman.	..	..	m	m	
" H. C. Lockwood.....	14	13	27	16	20	36	"	..	..	..	m	
" L. I. Merritt.....	13	15	28	14	13	27	"	..	..	..	m	
Musician J. S. St. John.....	15	13	28	14	14	28	"	..	1st c. m.	m	m	
Private Archibald, G.....	17	19	36	15	17	32	"	..	..	..	m	
" Briggs, F. M.....	17	15	32	18	14	32	"	..	..	..	..
" DuBois, C. E.....	19	13	32	16	13	29	"	..	..	..	..
" Haddock, E.....	16	9	25	15	15	30	"	..	..	..	m	
" Hoyt, H. C.....	14	19	33	18	19	37	1st Cl. M.	..	..	..	1st c. m.	
" Hallenbeck, W. A.....	15	16	31	13	13	26	Marksman.	..	..	..	..
" Raymond, J. H.....	14	13	27	15	18	33	"	..	m	m	..	
" Toms, R. A.....	13	15	28	16	15	31	"	..	..	..	..
" Weed, A. Jr.....	17	17	34	18	20	38	1st Cl. M.	..	..	..	..
" Worden, F. H.....	18	14	32	15	13	28	Marksman.	..	..	..	..

COMPANY D.

Captain R. Frost.....	18	15	33	20	21	41	Sharps'r.	..	..	..	V s	
Q.-M.Sgt. H. S. Ganung.....	18	17	35	17	13	30	V Marks'n.	m '84 m '85	..	s	s	
Trump'r J. W. Gorham.....	22	18	40	16	16	32	"	s '86	1st c. m.	..	1st c. m.	
								1st c. m. '87	..	..	..
Musician L. A. Taylor.....	19	23	42	15	15	30	Marksman.	..	..	..	..

ADJUTANT-GENERAL'S REPORT.

COMPANY E.

NAME.	2d Class.			1st Class.			Designation. 1891.	Previous Qualifications.			
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.
Sergeant G. Baker.....	16	14	30	20	19	39	1st Cl. M.	..	1st c. m.	m	

COMPANY F.

Corporal L. F. Pollard.....	17	23	40	17	21	38	1st Cl. M.				
Private Cooper, J. F.....	14	13	27	15	14	29	Marksmen.				

COMPANY I.

1st Lieut. C. N. Parsons.....	13	13	26	14	14	28	Marksmen.	..	..	..	m
1st Sergt. W. H. Bramhall....	19	16	35	15	13	28	"	..	..	..	m

FOURTH MACHINE-GUN PLATOON.

2d Lieut. G. P. Rand.....	13	18	31	17	18	35	1st Cl. M.	..	..	V m	m
Sergeant F. S. Edwards.....	23	18	41	16	21	37	Marksmen.	..	..	V s	1st c. m.
" R. Paul.....	15	16	31	18	18	36	V 1st Cl. M.	m '87	1st c. m.	1st c. m.	1st c. m.
Corporal E. T. Washburn	16	15	31	21	22	43	V Sharpsh'r.	m '87	m	1st c. m.	m
Private Tomlinson, C. D....	17	18	35	20	16	36	1st Cl. M.	..	1st c. m.	..	1st c. m.

By order of the Commander-in-Chief.

ANDREW H. EMBLER -

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, March 18, 1892.

GENERAL ORDERS, }
No. 5. }

I. Changes as follows in the commissioned officers of the CONNECTICUT NATIONAL GUARD, have occurred since February 18, 1892.

RESIGNED AND DISCHARGED.

FIRST REGIMENT.

Captain	William E. Allen,	Company D, February 24, 1892.
First Lieutenant	John J. Smith,	Company E, March 5, 1892.

SECOND REGIMENT.

Second Lieutenant	Frederick R. Fairbanks,	Company D, February 19, 1892.
First Lieutenant	Clemens R. Darnstaedt,	Company I, March 9, 1892.

FOURTH REGIMENT.

Captain	Henry S. Terrell,	Company I, March 1, 1892.
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SEPARATE COMPANIES.

First Lieut.	Watkins W. Christian,	Second Separate Company, March 1, 1892.
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PROMOTED AND APPOINTED.

SECOND REGIMENT.

Second Lieutenant Laurens Kling, of New Haven, appointed First Lieutenant Company B, with rank from February 24, 1892, *vice* Miller, resigned.

First Sergeant Albert F. Laudensack, of New Haven, appointed Second Lieutenant Company B, with rank from February 24, 1892, *vice* Kling, promoted.

Sergeant Joe Sutcliffe, of New Haven, appointed Second Lieutenant Company D, with rank from March 1, 1892, *vice* Fairbanks, resigned.

THIRD REGIMENT.

First Sergeant John F. McCarthy, of Windham, appointed Second Lieutenant Company E, with rank from February 18, 1892, *vice* Lynch, resigned.

FOURTH REGIMENT.

Private Fred J. Breckbill, of Danbury, appointed First Lieutenant Company G, with rank from February 16, 1892, *vice* Eriksson, resigned.

First Sergeant Emil J. Walter, of Danbury, appointed Second Lieutenant Company G, with rank from February 16, 1892, *vice* Scofield, resigned.

Corporal Robert J. Doyle, of South Norwalk, appointed Second Lieutenant Company D, with rank from February 19, 1892, *vice* Taylor, resigned.

II. The following are announced as the figures of merit of each organization of the CONNECTICUT NATIONAL GUARD for the month of February, 1892, based on the drill reports for the month:

FIRST REGIMENT.					SECOND REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.
A.	Mar. 1, 9.20 A.M.	4	68	91.91	A.	Mar. 1, 2.00 P.M.	5	68	97.80
B.	Mar. 4, 9.00 P.M.	4	68	90.44	B.	Mar. 3, 7.00 P.M.	4	67	92.92
C.	Mar. 2, 5.30 P.M.	4	68	95.96	C.	Mar. 1, 4.00 P.M.	4	67	93.29
D.	Mar. 2, 5.30 P.M.	4	63	87.85	D.	Mar. 2, 11.00 A.M.	4	67	96.65
E.	Mar. 2, 11.30 A.M.	4	67	84.71	E.	Mar. 2, 7.00 P.M.	4	68	94.12
F.	Mar. 1, 1.30 P.M.	4	55	82.50	F.	Mar. 1, 8.00 A.M.	4	67	97.77
G.	Mar. 3, 8.30 A.M.	5	64	93.85	G.	Mar. 7, 8.00 P.M.	4	67	96.27
H.	Mar. 4, 9.00 P.M.	4	67	92.92	H.	Mar. 8, 10.00 A.M.	5	61	87.18
I.	Mar. 2, 11.30 A.M.	4	67	85.83	I.	Mar. 2, 9.00 A.M.	4	66	96.24
K.	Mar. 1, 8.45 A.M.	5	52	86.91	K.	Mar. 1, 2.00 P.M.	4	64	97.75
Hosp. Corps.					Hosp. Corps.				
	Mar. 5, 9.00 A.M.	2	4	76.25		Mar. 1, 11.00 A.M.	2	5	100.00
1st Signal Corps.					2d Signal Corps.				
	Mar. 1, 4.15 P.M.	2	9	87.78		Mar. 2, 12.00 M.	2	10	93.49
1st M.-G. Plat.					2d M.-G. Plat.				
	Mar. 4, 9.00 A.M.	2	9	95.83		Mar. 9, 9.00 A.M.	2	9	97.22
Figure of merit of Regiment, 88.67					Figure of merit of Regiment, 95.44				

THIRD REGIMENT.					FOURTH REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.
A.	Mar. 1, 9.00 A.M.	4	56	84.43	B.	Mar. 8, 12.00 M.	4	66	84.87
B.	Mar. 2,	5	64	90.72	C.	Mar. 2, 9.00 A.M.	5	58	88.13
C.	Mar. 1, 9.00 A.M.	4	67	86.95	D.	Mar. 1, 5.00 P.M.	4	65	78.13
D.	Mar. 1, 9.00 A.M.	5	61	87.92	E.	Mar. 3, 6.00 P.M.	5	67	85.45
E.	Mar. 1, 9.00 P.M.	4	59	81.01	F.	Mar. 1, 12.00 M.	4	65	79.67
F.	Mar. 2, 10.00 A.M.	4	60	77.06	G.	Mar. 2, 11.00 A.M.	4	60	87.06
G.	Mar. 1, 12.00 M.	4	64	87.62	I.	Mar. 2, 11.00 A.M.	5	67	95.90
I.	Mar. 2, 2.00 P.M.	4	64	89.94	K.	Mar. 2, 4.00 P.M.	4	54	68.00
Hosp. Corps.					Hosp. Corps.				
	Mar. 1, 3.00 P.M.	2	5	100.00		Mar. 4, 9.00 A.M.	2	5	86.39
3d Signal Corps.					4th Signal Corps.				
	Mar. 1, 9.00 A.M.	2	10	92.50		Mar. 1, 4.00 P.M.	2	10	87.50
3d M.-G. Plat.					4th M.-G. Plat.				
	Mar. 1, 3.00 P.M.	2	9	100.00		Mar. 3, 9.00 A.M.	2	9	95.83
Figure of merit of Regiment, 88.92					Figure of merit of Regiment, 85.17				

SEPARATE COMPANIES.					BATTERY A.				
	Received at Brigade Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.	Platoons.	Received at Battery Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.
1st	Mar. 8, 11.00 A.M.	4	53	69.96	1st	Mar. 2,	2	35	76.34
2d	Mar. 5, 9.00 A.M.	4	51	74.15	2d	Mar. 3,	2	40	86.27
Figure of merit of Battery,									81.31

III. The following-named members of the National Guard have been dishonorably discharged from the military service of the State, in accordance with sentences of Field Officers' Courts-martial, viz. :

THIRD REGIMENT.

Company D — Private Peter H. White.

FOURTH REGIMENT.

Company K — Private Frank H. Butterfield.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, April 20, 1892.

GENERAL ORDERS, }
No. 6. }

I. Changes as follows in the commissioned officers of the CONNECTICUT NATIONAL GUARD, have occurred since March 18, 1892.

RESIGNED AND DISCHARGED.

SECOND REGIMENT.

First Lieutenant Henry S. Hamilton, Company E, March 23, 1892.

ADJUTANT-GENERAL'S REPORT.

THIRD REGIMENT.

First Lieutenant Albert C. Ghyser, Third Signal Corps, March 19, 1892.

FOURTH REGIMENT.

Major George W. Cornell, March 28, 1892.

PROMOTED AND APPOINTED.

FIRST REGIMENT.

John C. Bingham, of New Britain, appointed Captain Company D, with rank from March 5, 1892, *vice* Allen, resigned.

Second Lieutenant John E. Lynch, of New Britain, appointed First Lieutenant Company E, with rank from March 14, 1892, *vice* Smith, resigned.

First Sergeant William W. Bullen, of Plainville, appointed Second Lieutenant Company E, with rank from March 14, 1892, *vice* Lynch, promoted.

SECOND REGIMENT.

First Sergeant Walter R. Markham, of Middletown, appointed Second Lieutenant Company H, with rank from March 3, 1892, *vice* Elliott, resigned.

Second Lieutenant Oscar L. Bradley, of Meriden, appointed First Lieutenant Company I, with rank from March 24, 1892, *vice* Darnstaedt, resigned.

Delbert R. Jones, of Meriden, appointed Second Lieutenant Company I, with rank from March 24, 1892, *vice* Bradley, promoted.

THIRD REGIMENT.

Sergeant James L. Kingsley, of Norwich, appointed Second Lieutenant Company C, with rank from March 15, 1892, *vice* Hazen, resigned.

Sergeant Albert A. Beach, of New London, appointed First Lieutenant Third Signal Corps, with rank from March 25, 1892, *vice* Ghyser, resigned.

FOURTH REGIMENT.

Quartermaster-Sergeant Charles B. Moore, of Winchester, appointed Captain Company I, with rank from March 7, 1892, *vice* Terrell, resigned.

Captain James Sheridan, Company E, of Bridgeport, appointed Major, with rank from April 5, 1892, *vice* Cornell, resigned.

SEPARATE COMPANIES.

First Sergeant Edwin B. Freeman, of Hartford, appointed First Lieutenant Second Separate Company, with rank from March 11, 1892, *vice* Christian, resigned.

II. The following are announced as the figures of merit of each organization of the CONNECTICUT NATIONAL GUARD for the month of March, 1892, based on the drill reports for the month:

FIRST REGIMENT.					SECOND REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.
A.	Apr. 3, 5.00 P.M.	5	68	94.86	A.	Apr. 5, 8.00 A.M.	4	68	98.53
B.	Apr. 6, 1.00 P.M.	5	68	86.03	B.	Apr. 2, 8.00 A.M.	4	67	95.15
C.	Apr. 4, 1.00 P.M.	5	67	95.53	C.	Apr. 3, 10.00 A.M.	5	66	91.69
D.	Apr. 4, 1.00 P.M.	5	62	86.51	D.	Apr. 2, 8.00 A.M.	5	68	96.69
E.	Apr. 5, 5.00 P.M.	4	65	87.36	E.	Apr. 1, 7.00 P.M.	5	68	94.86
F.	Apr. 1, 11.30 A.M.	4	53	78.45	F.	Apr. 5, 8.00 A.M.	5	67	94.04
G.	Apr. 2, 9.00 A.M.	4	68	98.53	G.	Apr. 1, 1.00 P.M.	5	67	97.02
H.	Apr. 3, 5.00 P.M.	4	68	93.38	H.	Apr. 7, 9.00 A.M.	4	65	83.51
I.	Apr. 2, 9.00 A.M.	5	66	90.18	I.	Apr. 3, 10.00 A.M.	5	64	96.19
K.	Apr. 1, 8.15 A.M.	4	57	88.94	K.	Apr. 2, 11.00 A.M.	5	66	96.24
Hosp. Corps.					Hosp. Corps.				
	Apr. 2, 11.00 A.M.	2	4	82.50		Apr. 1, 8.00 A.M.	2	5	95.00
1st Signal Corps.					2d Signal Corps.				
	Apr. 1, 9.00 A.M.	2	10	86.91		Apr. 1, 11.00 A.M.	2	10	100.00
1st M.-G. Plat.					2d M.-G. Plat.				
	Apr. 1, 8.15 A.M.	2	9	98.61		Apr. 1, 2.00 P.M.	2	9	97.22
Figure of merit of Regiment, 89.83					Figure of merit of Regiment, 95.09				

THIRD REGIMENT.					FOURTH REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.
A.	Apr. 2, 9.00 P.M.	5	58	82.53	B.	Apr. 15, 1.00 P.M.	5	64	85.67
B.	Apr. 2, 9.00 A.M.	4	68	92.28	C.	Apr. 2, 9.00 A.M.	4	64	92.28
C.	Apr. 2, 1.00 P.M.	5	67	87.32	D.	Apr. 8, 4.00 P.M.	4	65	80.44
D.	Apr. 1, 9.00 A.M.	4	58	90.29	E.	Apr. 4, 9.00 A.M.	4	67	85.45
E.	Apr. 2, 9.00 P.M.	5	57	79.73	F.	Apr. 4, 9.00 A.M.	4	68	85.93
F.	Apr. 2, 10.00 A.M.	5	57	78.41	G.	Apr. 1, 1.00 P.M.	5	61	83.08
G.	Apr. 2, 4.00 P.M.	5	61	84.72	I.	Apr. 2, 3.00 P.M.	4	65	88.90
I.	Apr. 1, 9.00 P.M.	5	64	84.47	K.	Apr. 1, 1.00 P.M.	5	52	67.19
Hosp. Corps.					Hosp. Corps.				
	Apr. 1, 9.00 A.M.	2	5	100.00		Apr. 2, 9.00 A.M.	2	4	82.50
3d Signal Corps.					4th Signal Corps.				
	Apr. 1, 9.00 A.M.	2	10	100.00		Apr. 2, 9.00 A.M.	2	10	90.00
3d M.-G. Plat.					4th M.-G. Plat.				
	Apr. 1, 9.00 A.M.	2	9	100.00		Apr. 8, 9.00 A.M.	2	9	94.45
Figure of merit of Regiment, 89.07					Figure of merit of Regiment, 85.08				

SEPARATE COMPANIES.					BATTERY A.				
	Received at Brigade Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.		Received at Battery Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.
1st	Apr. 11, 10.00 A.M.	4	52	65.27	1st	Apr. 4,	2	35	72.06
2d	Apr. 7, 9.00 A.M.	5	50	75.38	2d	Apr. 2,	2	39	80.83
					Figure of merit of Battery, 76.45				

III. The following members of the National Guard are announced as having qualified during the season of 1891, as Marksmen, in accordance with Article XXVII, Regulations C. N. G., 1884, in addition to those now announced in G. O. No. 4, c. s., and are awarded the State decoration, which is to be worn whenever the dress uniform is worn.

The letter "V" or "X" prefixed to grade in record of previous qualifications, or in "Designation 1891," indicates that year to have been the fifth (V), or tenth (X), qualifications.

THIRD REGIMENT.

COMPANY C.

NAME.	2d Class.			1st Class.			Designa- tion. 1891.	Previous Qualifications.			
	300 Yds.	400 Yds.	Total.	200 Yds.	500 Yds.	Total.		1878-87.	1888.	1889.	1890.
Corporal W. G. Haselden,	22	15	37	15	16	31	Marksmen.	....	....	V. m.	1st c. m.

FOURTH REGIMENT.

COMPANY K.

1st Lieutenant W. H. Fryer,	21	15	36	17	13	30	V. Marks'n.	m. 79, 80, 1st c. m 85, m. 86.			
Corporal J. C. Vanderbeck,	20	17	37	15	16	31	Marksmen.				
Private Lumis, G. F.,	15	11	26	16	18	34	"				

IV. Private James F. Cooper, Company F, Fourth Regiment, Connecticut National Guard, has been dishonorably discharged from the military service of the State in accordance with sentence of Field Officers' Court-Martial.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

• ADJUTANT-GENERAL'S OFFICE,

Hartford, April 22, 1892.

GENERAL ORDERS, }

No. 7. }

I. The companies of infantry, Hospital Corps, Signal Corps, Machine-Gun Platoons, and Platoons of Light Artillery, National Guard, will each parade one day during the month of May, *proximo*, in their respective towns, under order of the Regimental, Battery, or Separate Company commander. Organizations will devote a portion of the day to rifle practice, under orders of the commandant and supervision of the regimental inspector of Rifle Practice, and the rest of the day to such drill as the commandant shall direct, including instruction in guard duty and extended order.

II. Regimental and battery commanders will attend the parades of companies and platoons in person, or be represented by a field officer, and will report in writing through Brigade Headquarters *on or before June 1, proximo*, the condition and efficiency of each company, the rifle practice and drill and maneuvers performed, time occupied in rifle practice, time devoted to drill, and the number in each organization present and performing duty.

III. The commanding officer of each Separate Company, A and B, will report to the commanding officer of the regiment in whose district his command is located, the date fixed for the parade of his company; when such regimental commander will detail a field officer of his regiment to attend the parade of such Separate Company and report as provided in Par. II.

IV. The commanding officer of each company Governor's Guards is hereby directed to assemble his command for one day's drill and parade on such date as he may determine prior to May 31st, *proximo*; forwarding to this office, when issued, a copy of his order designating the date of parade.

V. Triplicate muster-pay-rolls for duty, duly signed by each member parading, and sworn to by the commanding officer, will be required, one copy to be retained by the commanding officer, and two copies to be forwarded to this office within ten days from the date of the parade.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE,

*Hartford, April 22, 1892.*GENERAL ORDERS, }
No. 8. }

The following appointment upon the staff of the Commander-in-Chief is hereby announced:

STATE OF CONNECTICUT,

Executive Department,

Hartford, April 22, 1892.

ORDER :

Francis T. Maxwell, of Vernon, is hereby appointed Aide-de-Camp, with rank of Colonel, on the staff of the Commander-in-Chief, *vice* Redfield, resigned.

He will be obeyed and respected accordingly.

The Adjutant-General is charged with the promulgation of this order to all concerned.

MORGAN G. BULKELEY,

Governor and Commander-in-Chief.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

*Hartford, May 18, 1892.*GENERAL ORDERS, }
No. 9. }

I. Changes as follows in the commissioned officers of the CONNECTICUT NATIONAL GUARD, have occurred since April 20, 1892.

RESIGNED AND DISCHARGED.

FIRST REGIMENT.

First Lieutenant Edwin L. Bolles, Company C, May 17, 1892.

SECOND REGIMENT.

Lieutenant Colonel Frank T. Lee, April 27, 1892.

FOURTH REGIMENT.

Second Lieutenant William Maxwell, Company I, May 2, 1892.

Captain George T. Jewell, Company K, May 14, 1892.

First Lieutenant William H. Fryer, Company K, May 14, 1892.

Second Lieutenant William F. Holmes, Company K, May 14, 1892.

PROMOTED AND APPOINTED.

SECOND REGIMENT.

Second Lieutenant William H. Coleman, of New Haven, appointed First Lieutenant Company E, with rank from April 5, 1892, *vice* Hamilton, resigned.

First Sergeant Charles S. Schappa of New Haven, appointed Second Lieutenant Company E, with rank from April 5, 1892, *vice* Coleman, promoted.

FOURTH REGIMENT.

First Lieutenant John J. Glennon of Bridgeport, appointed Captain Company E, with rank from April 27, 1892, *vice* Sheridan, promoted.

Second Lieutenant John O'Niel of Bridgeport, appointed First Lieutenant Company E, with rank from April 27, 1892, *vice* Glennon, promoted.

Sergeant John Pender of Bridgeport, appointed Second Lieutenant, Company E, with rank from April 27, 1892, *vice* O'Niel, promoted.

II. The following are announced as the figures of merit of each organization of the CONNECTICUT NATIONAL GUARD for the month of April, 1892, based on the drill reports for the month:

FIRST REGIMENT.					SECOND REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.
A.	May 3, 8.30 A.M.	4	68	91.91	A.	May 5, 9.00 A.M.	4	68	98.53
B.	May 2, 11.00 A.M.	4	68	91.18	B.	May 4, 8.00 A.M.	4	67	95.15
C.	May 2, 3.30 P.M.	4	68	97.80	C.	May 2, 8.00 A.M.	4	68	95.59
D.	May 4, 11.00 A.M.	4	62	88.12	D.	May 1, 8.00 A.M.	4	68	97.43
E.	May 3, 3.30 P.M.	4	65	87.73	E.	May 3, 8.00 A.M.	4	68	95.96
F.	May 3, 11.30 A.M.	4	54	78.19	F.	May 2, 7.00 P.M.	4	68	99.27
G.	May 3, 8.30 A.M.	4	68	99.27	G.	May 2, 8.00 A.M.	4	68	97.61
H.	May 3, 8.30 A.M.	5	68	92.65	H.	May 1, 8.00 A.M.	4	68	91.18
I.	May 2, 11.30 A.M.	4	68	92.28	I.	May 4, 8.00 A.M.	4	66	96.99
K.	May 2, 9.00 A.M.	4	61	89.64	K.	May 4, 2.00 P.M.	4	68	96.33
Hosp. Corps.					Hosp. Corps.				
	May 2, 10.00 A.M.	2	4	70.00		May 2, 8.00 A.M.	2	5	90.00
1st Signal Corps.					2d Signal Corps.				
	May 2, 1.30 P.M.	2	9	86.39		May 2, 11.00 A.M.	2	10	100.00
1st M.-G. Plat.					2d M.-G. Plat.				
	May 2, 8.00 A.M.	2	9	97.22		May 1, 10.00 A.M.	2	9	97.22
Figure of merit of Regiment, 89.41					Figure of merit of Regiment, 96.25				

ADJUTANT-GENERAL'S REPORT.

THIRD REGIMENT.					FOURTH REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Mem'ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Mem'ship.	Figure of Merit.
A.	May 1, 9.00 A.M.	4	58	82.53	B.	May 6, 9.00 A.M.	4	65	84.28
B.	May 4, 3.00 P.M.	4	65	90.05	C.	May 4, 9.00 A.M.	4	66	94.34
C.	May 2, 11.00 A.M.	4	67	89.18	D.	May 2, 9.00 A.M.	5	66	82.60
D.	May 1, 9.00 A.M.	4	57	89.82	E.	May 4, 9.00 A.M.	4	67	80.98
E.	May 3, 7.00 A.M.	4	58	81.24	F.	May 4, 9.00 A.M.	4	68	89.71
F.	May 4, 7.00 A.M.	4	55	79.77	G.	May 4, 9.00 A.M.	4	62	87.72
G.	May 2, 11.00 A.M.	4	64	86.81	H.	May 4, 9.00 A.M.	4	66	79.95
I.	May 2, 11.00 A.M.	4	65	86.96	K.	May 4, 9.00 A.M.	4	54	70.08
Hosp. Corps.					Hosp. Corps.				
	May 1, 9.00 A.M.	2	5	100.00		May 5, 4.00 P.M.	2	5	91.95
3d Signal Corps.					4th Signal Corps.				
	May 1, 3.00 P.M.	2	9	94.72		May 2, 4.00 P.M.	2	10	92.50
3d M.-G. Plat.					4th M.-G. Plat.				
	May 3, 9.00 A.M.	2	9	97.22		May 4, 9.00 A.M.	2	9	94.45
Figure of merit of Regiment, 88.94					Figure of merit of Regiment, 86.23				

SEPARATE COMPANIES.					BATTERY A.				
	Received at Brigade Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.	Platoons.	Received at Battery Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.
1st	May 7, 11.00 A.M.	5	64	68.06	1st	May 2,	2	40	85.64
2d	May 7, 9.00 A.M.	4	51	75.13	2d	May 4,	2	39	76.99
					Figure of merit of Battery, 81.32				

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, May 28, 1892.

GENERAL ORDERS, }
No. 10. }

I. The resignation of Brigadier-General Thomas L. Watson, Commanding Brigade, Connecticut National Guard is hereby accepted.

II. Colonel George Haven, Commanding Third Regiment, C. N. G., is hereby appointed to the Command of the Brigade, with rank of Brigadier-General from date hereof. He will be obeyed and respected accordingly.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE,

Hartford, June 24, 1892.

GENERAL ORDERS, }
No. 11. }

I. Changes as follows in the commissioned officers of the CONNECTICUT NATIONAL GUARD, have occurred since May 18, 1892 :

RESIGNED AND DISCHARGED.

Brigadier-General Thomas L. Watson, Comd'g Brigade, May 28, 1892.

BRIGADE STAFF.

Lieut. Colonel Louis N. Van Keuren, Assistant Adjutant-

General of Brigade, May 30, 1892.

Lieut. Colonel George L. Porter, Medical Director, June 3, 1892.

Major Phineas H. Ingalls, Brigade Inspector, June 3, 1892.

Major Howard G. Hubbell, Brigade Quartermaster, June 3, 1892.

Major Isaac Bromley, Brigade Commissary, June 3, 1892.

Major Edward I. Williams, Brigade Inspector of Rifle

Practice, June 3, 1892.

Captain Gilbert C. Bishop, Aide-de-Camp, June 3, 1892.

Captain John P. Kellogg, Aide-de-Camp, June 3, 1892.

ADJUTANT GENERAL'S REPORT.

FIRST REGIMENT.

Captain John C. Bingham, Company D May 27, 1892.

SECOND REGIMENT.

Captain Charles C. Ford, Inspector of Rifle Practice, June 3, 1892.

Second Lieutenant Joe. Sutcliffe, Company D, June 3, 1892.

PROMOTED AND APPOINTED.

Colonel George Haven, Third Regiment, of New London, appointed Brigadier General, Commanding Brigade, with rank from May 28, 1892, *vice* Watson, resigned.

Captain George M. Cole, Adjutant Third Regiment, of New London, appointed Assistant Adjutant-General of Brigade, with rank of Lieutenant-Colonel from May 30, 1892, *vice* Van Keuren, resigned.

Charles Cheney, of South Manchester, appointed Brigade Inspector, with rank of Major, from June 6, 1892, *vice* Ingalls, resigned.

William F. Bidwell, Major, Third Regiment, of Killingly, appointed Brigade Quartermaster, with rank of Major from June 6, 1892, *vice* Hubbell, resigned.

First Lieutenant Frederick Farnsworth, Paymaster Third Regiment, of New London, appointed Brigade Commissary, with rank of Major, from June 6th, 1892, *vice* Bromley, resigned.

George E. Albee, of New Haven, appointed Brigade Inspector of Rifle Practice, with rank of Major, from June 6th, 1892, *vice* Williams, resigned.

William W. Starr, Jr., of Bridgeport, appointed Engineer and Signal Officer, with rank of Major, from June 6th, 1892, *vice* Burdett, promoted.

Major Leonard B. Almy, Surgeon Third Regiment, of Norwich, appointed Medical Director, with rank of Lieutenant-Colonel, from June 6th, 1892, *vice* Porter, resigned.

First Lieutenant Howard A. Giddings, First Signal Corps, First Regiment, of Hartford, appointed Aide-de-Camp, with rank of Captain, from June 6th, 1892, *vice* Kellogg, resigned.

Corporal William H. Saxton, Jr., Third Machine-Gun Platoon, Third Regiment, of New London, appointed Aide-de-Camp, with rank of Captain, from June 6th, 1892, *vice* Bishop, resigned.

FIRST REGIMENT.

Frederic C. Billings, of Hartford, appointed Paymaster, with rank of First Lieutenant, from June 1st, 1892, *vice* Cheney, promoted.

Second Lieutenant Harry M. Loomis, of Rockville, appointed First Lieutenant Company C, with rank from May 24th, 1892, *vice* Bolles, resigned.

First Sergeant J. Paul Haun, of Rockville, appointed Second Lieutenant Company C, with rank from May 24th, 1892, *vice* Loomis, promoted.

First Lieutenant Frank W. Humphrey, of New Britain, appointed Captain Company D, with rank from June 7th, 1892, *vice* Bingham resigned.

Second Lieutenant Sidney M. Leonard, of New Britain, appointed First Lieutenant Company D, with rank from June 7th, 1892, *vice* Humphrey, promoted.

First Sergeant Louis V. Schutz, of New Britain, appointed Second Lieutenant Company D, with rank from June 7th, 1892, *vice* Leonard, promoted.

SECOND REGIMENT.

Major Lucien F. Burpee, of Waterbury, appointed Lieutenant Colonel with rank from May 3d, 1892, *vice* Lee, resigned.

Timothy F. Callahan, of New Haven, appointed Major, with rank from May 25th, 1892, *vice* Burpee, promoted.

George G. LaBarnes, of Wallingford, appointed Inspector of Rifle Practice, with rank of Captain from June 11th, 1892, *vice* Ford, resigned.

FOURTH REGIMENT.

Adjutant Charles W. Burpee, of Bridgeport, appointed Captain Company K, with rank from May 21st, 1892, *vice* Jewell, resigned.

First Lieutenant James K. Crofut, Quartermaster, of Norwalk, appointed Adjutant, with rank of Captain from June 4th, 1892, *vice* Burpee, appointed Captain Company K.

First Sergeant William H. Bramhall, of Winchester, appointed Second Lieutenant Company I, with rank from May 9th, 1892, *vice* Maxwell, resigned.

Private Samuel C. Parker, of Bridgeport, appointed First Lieutenant Company K, with rank from May 26th, 1892, *vice* Fryer, resigned.

Corporal Frederick H. Masterson, of Bridgeport, appointed Second Lieutenant Company K, with rank from May 26th, 1892, *vice* Holmes, resigned.

II. The following are announced as the figures of merit of each organization of the CONNECTICUT NATIONAL GUARD for the month of May, 1892, based on the drill reports for the month:

FIRST REGIMENT.					SECOND REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Men's ship.	Figure of Merit.
A.	June 1, 8.00 A.M.	4	68	94.86	A.	June 1, 8.00 A.M.	6	68	99.27
B.	June 4, 8.00 A.M.	5	68	93.38	B.	June 6, 8.00 A.M.	5	66	96.24
C.	June 1, 1.00 P.M.	6	68	98.65	C.	June 3, 8.00 A.M.	5	68	95.59
D.	June 3, 7.00 P.M.	5	65	86.59	D.	June 1, 8.00 A.M.	5	68	98.90
E.	June 3, 9.00 A.M.	4	66	90.55	E.	June 3, 4.00 P.M.	5	68	97.06
F.	June 1, 8.00 A.M.	5	54	84.67	F.	June 1, 4.00 P.M.	4	68	100.00
G.	June 1, 1.00 P.M.	5	68	98.60	G.	June 8, 8.00 A.M.	6	67	99.63
H.	June 1, 8.00 A.M.	5	67	96.65	H.	June 8, 8.00 A.M.	5	68	91.91
I.	June 3, 9.00 A.M.	4	67	92.92	I.	June 5, 10.00 A.M.	5	67	97.39
K.	June 1, 8.00 A.M.	5	68	98.38	K.	June 4, 11.00 A.M.	5	67	95.90
Hosp. Corps.					Hosp. Corps.				
	June 2, 10.00 A.M.	3	4	77.44		June 3, 8.00 A.M.	2	5	92.50
1st Signal Corps.					2d Signal Corps.				
	June 1, 8.00 A.M.	3	9	93.80		June 1, 4.00 P.M.	3	10	100.00
1st M.-G. Plat.					2d M.-G. Plat.				
	June 1, 8.00 A.M.	3	8	98.15		June 2, 8.00 A.M.	3	9	100.00
Figure of merit of Regiment,				92.66	Figure of merit of Regiment,				97.26

THIRD REGIMENT.					FOURTH REGIMENT.				
Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Mem'ship.	Figure of Merit.	Companies.	Received at Regimental Headquarters.	No. of Drills.	Av. Mem'ship.	Figure of Merit.
A.	June 1,	5	56	83.09	B.	June 2, 9.00 A.M.	6	64	86.81
B.	June 1,	6	67	89.93	C.	June 2, 9.00 A.M.	5	68	93.38
C.	June 2,	5	67	90.68	D.	June 2, 9.00 A.M.	4	67	86.20
D.	June 1,	5	57	90.69	E.	June 3, 4.00 P.M.	6	67	86.95
E.	June 2,	4	59	83.13	F.	June 3, 4.00 P.M.	5	67	90.68
F.	June 2,	5	57	79.29	G.	June 2, 2.00 P.M.	6	64	84.86
G.	June 2,	4	62	90.13	H.	June 8, 10.00 A.M.	6	61	80.21
I.	June 2,	6	66	89.42	K.	June 4, 6.00 P.M.	5	52	84.50
Hosp. Corps.					Hosp. Corps.				
	June 3,	3	5	96.67		June 3, 4.00 P.M.	3	5	98.33
3d Signal Corps.					4th Signal Corps.				
	June 1,	4	10	98.75		June 2, 9.00 A.M.	3	10	96.67
3d M.-G. Plat.					4th M.-G. Plat.				
	June 1,	3	9	99.08		June 3, 2.00 P.M.	3	9	100.00
Figure of merit of Regiment, 90.08					Figure of merit of Regiment, 89.87				

SEPARATE COMPANIES.					BATTERY A.				
	Received at Brigade Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.	Platoons.	Received at Battery Headquarters.	No. of Drills.	Average Membership.	Figure of Merit.
1st	June 9,	3	67	78.74	1st	June 1,	3	39	89.81
2d	June 7,	5	52	78.73	2d	June 4,	3	40	91.27
					Figure of merit of Battery, 90.54				

III. The figures of merit of organization of the Connecticut National Guard for the drill season November 1, 1891, to May 31, 1892, are as follows:

Brigade,	83.22
Second Regiment,	94.74
First " "	89.10
Third " "	87.83
Fourth " "	86.43
Battery A,	80.78
Second Separate Company,	74.61
First " "	69.06

COMPANIES OF INFANTRY.

1. Co. F, 2d Regiment, .	97.46	20. Co. D, 3d Regiment, .	87.45
2. " A, 2d " .	97.42	21. " E, 1st " .	87.29
3. " G, 2d " .	96.62	22. " B, 4th " .	87.28
4. " C, 1st " .	96.44	23. " H, 2d " .	87.08
5. " D, 2d " .	95.82	24. " D, 1st " .	86.79
6. " I, 2d " .	95.27	25. " C, 3d " .	86.30
7. " G, 1st " .	94.50	26. " E, 4th " .	86.06
8. " E, 2d " .	94.06	27. " I, 3d " .	85.67
9. " K, 2d " .	93.75	28. " G, 3d " .	85.33
10. " C, 2d " .	93.74	29. " D, 4th, " .	84.01
11. " B, 2d " .	93.22	30. " G, 4th " .	83.82
12. " H, 1st " .	92.00	31. " F, 4th " .	83.32
13. " A, 1st " .	91.65	32. " F, 1st " .	81.97
14. " B, 3d " .	89.73	33. " A, 3d " .	81.18
15. " I, 4th " .	89.37	34. " E, 3d " .	80.04
16. " I, 1st " .	89.28	35. " F, 3d " .	76.25
17. " C, 4th " .	89.21	36. 2d Separate Company, .	74.61
18. " K, 1st " .	89.16	37. Co. K, 4th Regiment, .	71.19
19. " B, 1st " .	88.99	38. 1st Separate Company, .	69.06

PLATOONS OF ARTILLERY.

Second Platoon, Battery A (Branford),	82.90
First Platoon, Battery A (Guilford),	78.65

HOSPITAL CORPS.

Hospital Corps, 3d Regiment,	98.81
" " 2d "	92.06
" " 4th "	89.19
" " 1st "	78.95

SIGNAL CORPS.

Second Signal Corps, 2d Regiment,	97.28
Third " " 3d "	96.09
Fourth " " 4th "	91.43
First " " 1st "	85.61

MACHINE-GUN PLATOONS.

Third Machine-Gun Platoon, 3d Regiment,	99.27
Second " " 2d "	97.82
Fourth " " 4th "	95.84
First " " 1st "	95.70

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE,

Hartford, June 29, 1892.

GENERAL ORDERS, }

No. 12. }

I. In accordance with the Militia Law of the State, the Brigade of Connecticut National Guard will assemble at the State Military Rendezvous, Niantic, Conn., on Saturday, August 13, 1892, not later than 3 o'clock, p. m., for an eight days' tour of duty and instruction under the immediate orders of the Brigade Commander, Brigadier-General George Haven, who is hereby directed to make requisition on the Quartermaster-General of the State for necessary transportation, equipage, and supplies, to issue orders governing the movement of troops, and details of Camp and other duty during the eight days' encampment. He will cause a thorough inspection of all books of record to be made, and instruct, where necessary, the proper keeping of the same during the encampment. If the officer having this duty in charge requires assistance, the Assistant Adjutant-General and clerical force of this office will be at his disposal.

"Consolidated Daily Reports" will be made to these Headquarters in the field, and at the end of the tour of duty, the "Consolidated Morning Reports" of each organization for each day of the encampment will be required.

The Brigade Commander will call the attention of officers and enlisted men to the laws of the State relating to encampments of the Connecticut National Guard, the penalties for absence, unsoldierly conduct, disobedience of orders, etc., and punish to the extent of the law, any and all offenders.

II. The Quartermaster-General will arrange the Camp-ground and pitch the tents, including quarters for the Commander-in-Chief and his Staff.

Upon approved requisition, to be made by commanding officers of organizations on or before July 20, proximo, he will furnish transportation to and from the Camp-ground. Transportation for Baggage, beyond that carried by the men in knapsacks, will be limited to two Company Chests for each Company and one for each Platoon, and one valise or small trunk for each officer. The Quartermaster-General will hold *Regimental Quartermasters to a strict compliance with this requirement*. Transportation for Horses for Field and Staff use, will be furnished only from the respective Regimental Headquarters, and from the location of Battery and Machine-Gun Platoons for their use. By reason of limited stable accommodations, Acting Battalion Adjutants will not be mounted during the encampment. The Quartermaster-General will, however, provide one or two extra mounts for Captains temporarily in command of Battalions.

III. Muster Pay-rolls made *strictly* in accord with instructions thereon, signed and completed, according to law, must be delivered at these Headquarters, in the field, by 10 o'clock A. M., Saturday, August 20, 1892. Attention is called to circular from this office dated August 13, 1891, relating to Muster Pay-rolls.

Men enlisted during the month of June, 1892, may be carried on Muster Pay-rolls for duty in camp, provided commanding officers certify that such men have received instruction in the armory at least two evenings each week since enlistment, and the enlistment papers have been received at these Headquarters previous to, or with the "gain and loss report" for the month of June.

Enlisted men whose term of service expires during encampment will be discharged upon date of expiration of term, and only by immediate re-enlistment can they be carried longer on the rolls for pay.

Requisitions for clothing and equipments for use during the encampment must be forwarded to this office before July 20, proximo.

IV. The following is substituted for Par. 2126, Reg. C. N. G., Blouse.

Material.—Dark blue wool flannel, U. S. army standard; blue twilled mixed flannel lining for body, and unbleached muslin lining for sleeves.

Pattern.—To be single breasted sack coat with falling collar, and having five (5) Connecticut regulation buttons, large in front from neck to waist, and three (3) Connecticut regulation buttons, small, on the cuff of each sleeve.

Commandants of organizations will cause the shoulder straps and waist belt straps now on the Blouse of enlisted men to be removed; the expense attending such removal will be paid by the Quartermaster General upon presentation of properly executed vouchers.

V. The Governor will review the Brigade on Friday, August 19, 1892.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE,

Hartford, July 6, 1892.

GENERAL ORDERS, }

No. 13. }

I. First Lieutenant William H. C. Bowen, 5th Infantry, U. S. A., having reported in pursuance of instructions from Headquarters United States Army, is hereby assigned to duty on the staff of the Commander-in-Chief as Inspector and Military Instructor of the forces of the State.

II. Lieutenant Bowen will immediately arrange for meetings with the officers and non-commissioned officers of the Brigade of Connecticut National Guard, for the purpose of consultation in relation to the coming tour of duty at the "State Military Rendezvous."

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE,

Hartford, August 10, 1892.

GENERAL ORDERS, }

No. 14. }

I. Changes as follows in the commissioned officers of the CONNECTICUT NATIONAL GUARD, have occurred since June 24, 1892 :

RESIGNED AND DISCHARGED.

FIRST REGIMENT.

Second Lieutenant	Louis N. Mansuy,	Company F,	July 1, 1892.
First Lieutenant	William C. Herter,	Company A,	July 5, 1892.
Captain	Clarence H. Wickham,	Company F,	July 16, 1892.
First Lieutenant	Louis B. Hubbard,	Company F	July 16, 1892.

THIRD REGIMENT.

First Lieutenant	William E. Pendleton,	Quartermaster,	July 4, 1892.
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DISCHARGED FOR BENEFIT OF SERVICE.

Lieutenant-Colonel	Hezekiah B. Smith,	July 9, 1892.
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HONORABLY DISCHARGED.

Captain	Thomas H. Allen,	Insp. Rifle Practice,	July 4, 1892.
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APPOINTMENT REVOKED.

First Lieutenant	Charles B. Graves,	Assistant Surgeon,	July 9, 1892.
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FOURTH REGIMENT.

Captain	James D. Goulden,	Insp. Rifle Practice,	July 18, 1892.
First Lieutenant	Edward G. Aiken,	Company F,	July 20, 1892.
Captain	Garrie P. Sanger,	Company B,	August 1, 1892.

SECOND SEPARATE COMPANY.

Second Lieutenant	Albert E. Smith,	July 9, 1892.
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PROMOTED AND APPOINTED.

FIRST REGIMENT.

Sergeant Arthur B. Jenkins, of Hartford, appointed First Lieutenant commanding First Signal Corps, with rank from June 20, 1892, *vice* Giddings, promoted.

Second Lieutenant James C. Bailey, of Hartford, appointed First Lieutenant Company A, with rank from July 14, 1892, *vice* Herter, resigned.

Musician Edward E. Lamb, of Hartford, appointed Second Lieutenant Company A, with rank from July 14, 1892, *vice* Bailey, promoted.

Private Alexander Allen, of Hartford, appointed Captain Company F, with rank from July 26, 1892, *vice* Wickham, resigned.

Private George W. Ripley, of Hartford, appointed Second Lieutenant Company F, with rank from July 26, 1892, *vice* Mansuy, resigned.

SECOND REGIMENT.

Corporal Henry F. Morse, of New Haven, appointed Second Lieutenant Company D, with rank from June 16, 1892, *vice* Sutcliffe, resigned.

THIRD REGIMENT.

Augustus C. Tyler, of New London, appointed Colonel, with rank from June 22, 1892, *vice* Haven, promoted.

Captain John H. Morrison, Company E, of Willimantic, appointed Major, with rank from June 22, 1892, *vice* Bidwell, appointed Brigade Quartermaster.

Charles F. Chaney, of New London, appointed Adjutant, with rank of Captain, from July 4, 1892, *vice* Cole, promoted.

Gilbert C. Bishop, of New London, appointed Quartermaster, with rank of First Lieutenant from July 4, 1892, *vice* Pendleton, resigned.

Beverly C. Sanders, of New London, appointed Paymaster, with rank of First Lieutenant from July 4, 1892, *vice* Farnsworth, promoted.

First Lieutenant Lucius H. Fuller, Company G, of Putnam, appointed Inspector of Rifle Practice, with rank of Captain, from July 4, 1892, *vice* Allen, honorably discharged.

First Lieutenant Julian LaPierre, Assistant Surgeon, of Norwich, appointed Surgeon, with rank of Major, from July 4, 1892, *vice* Almy, promoted.

Charles B. Graves, of New London, appointed Assistant Surgeon, with rank of First Lieutenant, from July 4, 1892, *vice* LaPierre, promoted.

Hiram B. Thompson, of New London, appointed Assistant Surgeon, with rank of First Lieutenant, from July 16, 1892, *vice* Graves, appointment revoked.

Major John H. Morrison, of Willimantic, appointed Lieutenant-Colonel, with rank from July 18, 1892, *vice* Smith, discharged.

Captain John Armstrong, Company F, of Danielsonville, appointed Major, with rank from July 18, 1892, *vice* Morrison, promoted.

First Lieutenant Martin Heffernan, of Willimantic, appointed Captain Company E, with rank from July 14, 1892, *vice* Morrison, promoted.

Second Lieutenant John F. McCarthy, of Willimantic, appointed First Lieutenant Company E, with rank from July 14, 1892, *vice* Heffernan, promoted.

Charles Grady, of Willimantic, appointed Second Lieutenant Company E, with rank from July 14, 1892, *vice* McCarthy, promoted.

Sergeant Arthur D. McIntyre, of Putnam, appointed First Lieutenant Company G, with rank from July 16, 1892, *vice* Fuller, promoted.

FOURTH REGIMENT.

Private William H. Holly, Company C, of Stamford, appointed Inspector of Rifle Practice, with rank of Captain from July 19, 1892, *vice* Goulden, resigned.

Commissary Sergeant Everett Noyes, of Stamford, appointed Quartermaster, with rank of First Lieutenant from July 19, 1892, *vice* Crofut promoted.

Second Lieutenant Albert J. Wilcoxson, of Norwalk, appointed First Lieutenant Company F, with rank from July 26, 1892, *vice* Aiken, resigned.

First Sergeant John W. Latson, Jr., of Norwalk, appointed Second Lieutenant Company F, with rank from July 26, 1892, *vice* Wilcoxson, promoted.

SECOND SEPARATE COMPANY.

Private Arthur B. Mitchell, of Hartford, appointed Second Lieutenant, with rank from July 22, 1892, *vice* Smith, resigned.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, Sept. 1, 1892.

GENERAL ORDERS, }
 No. 15. }

I. Officers of the CONNECTICUT NATIONAL GUARD whose nominations have been approved by the Commander-in-Chief, will be examined in accordance with Law and Regulations, by the following Board.

Colonel	Walter J. Leavenworth,	Late 2d Regiment, C. N. G.
Lieut.-Colonel	William H. Bentley,	" 3d " "
Major	Thomas T. Welles,	" 2d " "
First Lieutenant	Wm. H. C. Bowen,	5th Infantry, U. S. A., Staff of the Commander-in-Chief,

and upon their recommendation, will be commissioned in the several grades to which they have been appointed.

II. The Examining Board will be in session

At the Armory	in Hartford,	September 15th, 16th, and 17th, 1892.
" "	in New Haven,	" 22d, 23d, and 24th, "
" "	in New London,	October 6th, 7th, and 8th, "
" "	in Bridgeport,	" 14th, 15th, and 17th, "

III. The following named Officers are hereby ordered to appear before said Board, reporting in fatigue uniform, without side arms.

AT HARTFORD.

FIRST REGIMENT.

Sept. 15.—Colonel Charles L. Burdett; Captain Henry S. Redfield, Adjutant; Captain William C. Cheney, I. R. P; First Lieutenant Frederick D. Rathbun, Quartermaster; First Lieutenant Frederic C. Billings, Paymaster.

Captain Charles H. Patterson; First Lieutenant William Blevins; First Lieutenant Dennis J. Murphy; First Lieutenant Henry R. Cheney; First Lieutenant James C. Bailey; First Lieutenant Charles E. Johnson.

BRIGADE STAFF.

Sept. 16.—Major Charles Cheney, Brigade Inspector; Captain Howard A. Giddings, Aide-de-Camp.

FIRST REGIMENT.

Sept. 16.—Captain Charles H. Moore; Captain Frank W. Humphrey; First Lieutenant Joseph R. Andrews; First Lieutenant John E. Lynch; First Lieutenant Harry M. Loomis; First Lieutenant Sidney M. Leonard; Second Lieutenant Theodore A. Stanley; Second Lieutenant J. Paul Haun; Second Lieutenant Louis V. Schutz.

First Lieutenant Arthur B. Jenkins, First Signal Corps.

Sept. 17.—Second Lieutenant John F. Lehr; Second Lieutenant Thomas P. Hastings; Second Lieutenant William W. Bullen; Second Lieutenant Edward E. Lamb; Second Lieutenant George W. Ripley.

SECOND SEPARATE COMPANY.

Sept. 17.—First Lieutenant Edwin B. Freeman; Second Lieutenant Arthur B. Mitchell.

AT NEW HAVEN.

SECOND REGIMENT.

Sept. 22.—Lieutenant Colonel Lucian F. Burpee; Major Timothy F. Callahan; Captain George G. La Barnes, I. R. P.; First Lieutenant Rodmond V. Beach, Paymaster.

Captain William E. Moses; First Lieutenant Edwin Hart; Second Lieutenant James Geddes.

BRIGADE STAFF.

Sept. 23.—Major George E. Albee, Brigade Inspector of Rifle Practice.

SECOND REGIMENT.

Sept. 23.—Captain Daniel L. Barber; Captain Wallace E. Beach; First Lieutenant Charles F. McCabe; First Lieutenant James C. Twining; Second Lieutenant Walter R. Markham; Second Lieutenant Charles S. Schappa.

BATTERY A.

Sept. 23.—First Lieutenant Barlow S. Honce; Second Lieutenant George T. Fowler.

SECOND REGIMENT.

Sept. 24.—First Lieutenant Lawrens Kling; First Lieutenant Oscar L. Bradley; First Lieutenant William H. Coleman; Second Lieutenant Clarence B. Dann; Second Lieutenant Henry Norton, Jr.; Second Lieutenant Albert F. Laudensack; Second Lieutenant Delbert R. Jones; Second Lieutenant Henry F. Morse.

ADJUTANT-GENERAL'S REPORT.

AT NEW LONDON.

BRIGADE STAFF.

Oct. 6. — Lieutenant Colonel George M. Cole, Assistant Adjutant-General of Brigade; Lieutenant Colonel Leonard B. Almy, Medical Director; Major William F. Bidwell, Brigade Quartermaster; Major Frederick Farnsworth, Brigade Commissary; Captain William H. Saxton, Jr., Aide-de-Camp.

THIRD REGIMENT.

Oct. 6. — Colonel Augustus C. Tyler; Lieutenant Colonel John H. Morrison; Major John Armstrong.

Oct. 7. — Major Julian La Pierre, Surgeon; Captain Lucius H. Fuller, I. R. P.

Captain Martin Heffernan; Captain Henry E. Burton; First Lieutenant John F. McCarthy; First Lieutenant Arthur D. McIntyre; First Lieutenant John McManus; Second Lieutenant Frank E. Warren; Second Lieutenant Charles Grady.

Oct. 8. — First Lieutenant Gilbert C. Bishop, Quartermaster; First Lieutenant Beverly C. Sanders, Paymaster; First Lieutenant Hiram B. Thompson, Assistant Surgeon.

Captain George W. Metcalf; Second Lieutenant Frank W. Rogers, Jr.; Second Lieutenant James L. Kingsley.

First Lieutenant Albert A. Beach, 3d Signal Corps.

AT BRIDGEPORT.

BRIGADE STAFF.

Oct. 14. — Major William W. Starr, Jr., Engineer and Signal Officer.

FOURTH REGIMENT.

Oct. 14. — Colonel Russell Frost; Major James Sheridan; Captain James K. Crofut, Adjutant; Captain William H. Holly, I. R. P.; First Lieutenant Everett Noyes, Quartermaster; Captain Reuben M. Rose; Captain John J. Glennon; Captain Charles W. Burpee.

First Lieutenant Owen Burns, 4th Signal Corps.

Oct. 15. — Captain Charles W. Hendrie; Captain Charles B. Moore; First Lieutenant Fred J. Breckbill; First Lieutenant Albert J. Wilcoxson; Second Lieutenant Emil J. Walter; Second Lieutenant John Pender; Second Lieutenant William H. Bramhall; Second Lieutenant Frederick H. Masterson.

Oct. 17.—Captain Merritt F. White; First Lieutenant Francis E. Alden; First Lieutenant John O'Neil; First Lieutenant Samuel C. Parker; First Lieutenant George D. Shelton; Second Lieutenant Gilbert L. Fitch; Second Lieutenant Robert J. Doyle; Second Lieutenant John W. Latson, Jr.; Second Lieutenant William Houlihan.

IV. The Examining Board will make return to this office of the name and rank of each officer examined, and the result of such examination, with rating as Fair, Good, or Excellent.

The Board is authorized to change the date of examination of an officer, to any other of the designated dates, upon application of the officer in writing, if the date assigned to him seriously interferes with business engagements.

V. As a matter of justice to the Officers of the Brigade, no session of the Examining Board has been ordered since the change in drill regulations was contemplated. A full drill season for study and an eight days' tour of duty in Camp for practice, is deemed sufficient to fit officers for examination.

By order of the Commander-in-Chief,

ANDREW H. EMBLER.

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, Sept. 2, 1892.

GENERAL ORDERS, }
No. 16. }

I. The State Rifle Match for Regimental Teams of the CONNECTICUT NATIONAL GUARD, inaugurated in 1888, will be held this year at such time and place as the Brigade Commander, Brigadier-General George Haven, may designate. He will arrange the details for the guidance of Contestants, covering conditions of match, size of Teams, etc., etc., and detail from his Staff such officers to conduct the match as in his judgment is necessary. Traveling and hotel expenses only will be allowed such officers as may be detailed. He will also make report of the match in detail to this office.

II. The Quartermaster-General will issue, upon approved requisition, the ammunition, targets, patches, etc., and pay for necessary official scorers and markers.

III. At the 1891 match the 1st prize was won by the 3d Reg't Team,
 2d " " 1st "
 3d " " 2d "

As provided in original orders, series of 1888, a suitable medal will be awarded by the State to each member of the team winning the 1st prize.

By order of the Commander-in-Chief.

ANDREW H. EMBLER.

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, Sept. 15, 1892.

GENERAL ORDERS, }
No. 17. }

I. The following persons are hereby appointed Post-Surgeons, to determine exemptions from military duty by the standard of disability prescribed by the Surgeon-General:

Hartford County—William W. Knight, Hartford; George Clary, New Britain; Edward F. Parsons, Enfield; I. P. Fiske, Southington; Henry C. Bunce, Glastonbury; George F. Lewis, Canton; Chas. M. Wooster, Tariffville; Henry E. Way, Bristol; Charles Carrington, Farmington; S. R. Burnap, Windsor Locks; Julian N. Parker, Manchester; Edward G. Fox, Wethersfield; E. J. McKnight, East Hartford.

New Haven County—C. Purdy Lindsley, New Haven; Alfred North, Waterbury; N. Nickerson, Meriden; George L. Beardsley, Derby; E. B. Heady, Milford; G. P. Reynolds, Guilford; J. D. McGaughey, Wallingford; Walter H. Zink, Branford; W. C. Williams, Cheshire; Franklin B. Tuttle, Naugatuck.

Middlesex County—Francis D. Edgerton, Middletown; John H. Grannis, Old Saybrook; Miner C. Hazen, Haddam; M. W. Plumsted, East Haddam; Charles H. Hubbard, Essex; Edwin Bidwell, Deep River; Herbert S. Reynolds, Clinton.

New London County—Francis N. Braman, New London; Leonard B. Almy, Norwich; Frank A. Coates, Stonington; E. Cornet, Colchester; George W. Harris, Old Lyme; William Soule, Griswold; Edwin H. Knowles, North Stonington.

Windham County—William A. Lewis, Plainfield; John B. Kent, Putnam; Theodore R. Parker, Windham; Rienzi Robinson, Killingly; Lowell Holbrook, Thompson; Henry L. Hammond, Dayville.

Tolland County—S. G. Risley, Vernon; C. B. Newton, Stafford; Henry S. Dean, Coventry; Frederick E. Johnson, Mansfield.

Fairfield County—Charles C. Godfrey, Bridgeport; Wm. C. Burke, Jr., Norwalk; Abraham T. Clason, Danbury; Charles R. Hart, Bethel; Charles E. Rowell, Stamford; Edwards M. Smith, Newtown; William L. Griswold, Greenwich; William S. Todd, Ridgefield; William C. Brownson, New Canaan; Loren T. Day, Westport; William H. Donaldson, Fairfield; Moses H. Wakeman, Redding; Andrew B. Gorman, Wilton; William F. French, Darien.

Litchfield County—C. O. Belden, Litchfield ; William Bissell, Salisbury ; J. C. Barker, New Milford ; Edward H. Welch, Winchester ; Leander Y. Ketcham, Woodbury ; Edward Sanford, Cornwall ; William Woodruff, Thomaston ; William L. Platt, Torrington ; Eugene C. French, Watertown ; Orlando Brown, Washington.

II. All persons between the ages of 18 and 45 years, desiring exemption from military duty and commutation tax, by reason of mental or physical disability, must report to one of the Post-Surgeons for examination, and if found exempt will be furnished with a Certificate of Exemption, to be filed by them with the Selectmen of the Town in which they are liable to enrollment. Those who were exempted by Post-Surgeons in any year since 1878, *and the disability classed as permanent*, and who are now living in the same town, will not be required to be examined again, unless by order of the Surgeon-General. Persons who neglect to file their Certificate of Exemption with the Selectmen *before the first day of December next* will be debarred from exemption for the year.

III. Post-Surgeons will make exemptions strictly in accordance with the orders of the Surgeon-General, and on the *1st of December next* will report to him, on blank form as provided, the names of all exempted by them, giving town and disability, and the names of all examined and not exempted. The fee for examination will be paid on approval of this office upon the report made to the Surgeon-General.

Blanks for Certificates of Exemption and Report to Surgeon-General will be supplied to Post-Surgeons from this office.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, Sept. 28, 1892.

GENERAL ORDERS, }
No. 18. }

I. Brigadier-General George Haven, commanding the Brigade of Connecticut National Guard, will assemble the infantry organizations of his command in the City of New York, at 7 o'clock, A. M., Wednesday, October 12, 1892, for the purpose of participating in the military parade of that day, to celebrate the discovery of America.

II. Brigadier-General William B. Rudd, Quartermaster-General of the State, is hereby charged with the transportation of the companies and regiments from and to their several localities, and will notify General Haven of railroad and steamboat schedules.

III. Brigadier-General Eugene S. Boss, Commissary-General of the State, is hereby charged with the subsistence of the troops during this tour of duty.

IV. The Command having volunteered to make this parade without pay, no muster pay-roll will be required of organizations participating. The Brigade Commander will cause morning reports to be made to him, and at the end of the tour will forward to this office, with his detailed report, a consolidated morning report of each organization.

V. The General Staff will report to the Adjutant-General in full uniform, mounted, at 7 o'clock, A. M., on day of parade. General Headquarters will be at the Hotel Brunswick.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, Oct. 20, 1892.

GENERAL ORDERS, }
No. 19. }

I. The weekly evening drills of the Connecticut National Guard will be resumed Tuesday, November 1, 1892, and continued to Thursday, June 1, 1893.

The Brigade Commander, Brigadier-General George Haven, is hereby charged with the direction, in orders, of the course of instruction to be pursued in each Company, Signal and Hospital Corps, Artillery and Machine Gun Platoon, and the arrangement of the details for the advancement of his Command in military knowledge and discipline.

If in his judgment fortnightly drills will be sufficient in organizations, other than Infantry Companies, for the attainment of proficiency, he may so order.

The detailing of Field and Staff officers by Regimental Commanders and Brigade Staff officers by the Brigade Commander, prescribed in Paragraph II, G. O. No. 22, A.-G. O., series of 1890, will be continued this season.

II. The Commander-in-Chief directs that the *special feature* of this drill-season be made thorough instruction and practice in *guard duty*, in order that at the next encampment of the Brigade, or if emergency requires the practice of this important duty, officers and men may be competent to perform it properly and intelligently.

III. The form of drill-reports of last season will be used for this season, made in triplicate and forwarded through regular channels, with one copy of the "Gain and Loss" report.

The rule of last season for computing percentages, if fortnightly drills are held in any organizations, will apply this season.

IV. The Annual Muster of the Connecticut National Guard required by law will be made between the 10th and 25th days of November, proximo, and will be in charge of the Brigade Commander, who will detail such officers of his Staff as may be required to do the work, assigning dates and localities as he deems best. Traveling and hotel expenses incurred by officers detailed for this duty will be paid by the Paymaster-General upon approved vouchers from this office; no other compensation will be allowed. Duplicate muster-rolls will be made by commanding officers of organizations and the requirements of existing orders relating thereto must be strictly followed.

V. The Commander-in-Chief again congratulates the members of the Brigade of Connecticut National Guard upon a successful eight days' tour of duty at "Camp White," August 13-20, 1892. The percentage of attendance was unusually large and the demonstration of interest in, and knowledge acquired of, the new drill regulations was commendable.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE,

Hartford, November 3, 1892.

GENERAL ORDERS, }
No. 20. }

I, The following-named officers of the Connecticut National Guard having been reported by the examining board convened by G. O. No. 15, c.s., A.-G. O. as possessing qualifications to perform efficiently all the duties of the grade to which they have been appointed, will be commissioned with rank and date as given herewith :

BRIGADE STAFF.

Lieut. Colonel George M. Cole, Assistant Adjutant-General,	May 30, 1892.
Major Charles Cheney, Brigade Inspector,	June 6, 1892.
Major William F. Bidwell, Brigade Quartermaster,	June 6, 1892.
Major Frederick Farnsworth, Brigade Commissary,	June 6, 1892.
Lieut. Colonel Leonard B. Almy, Medical Director,	June 6, 1892.
Major Wm. W. Starr, Engineer and Signal Officer,	June 6, 1892.
Captain Howard A. Giddings, Aide-de-Camp,	June 6, 1892.
Captain William H. Saxton, Jr., Aide-de-Camp,	June 6, 1892.

FIRST REGIMENT.

Colonel	Charles L. Burdette,	Jan. 18, 1892.
Captain	Henry S. Redfield, Adjutant,	Feb. 15, 1892.
First Lieutenant	Frederick D. Rathbun, Quartermaster,	Feb. 15, 1892.
First Lieutenant	Frederic C. Billings, Paymaster,	June 1, 1892.
Captain	William C. Cheney, Ins. Rifle Practice,	Feb. 15, 1892.
Captain	Charles H. Moore, Company I,	June 23, 1891.
Captain	Charles H. Patterson, Company H,	June 29, 1891.
Captain	Frank W. Humphrey, Company D,	June 7, 1892.
First Lieutenant	Joseph R. Andrews, Company I,	June 23, 1891.
First Lieutenant	William Blevins, Company H,	July 1, 1891.
First Lieutenant	Henry R. Cheney, Company G,	Jan. 11, 1892.
First Lieutenant	John E. Lynch, Company E,	Mch. 14, 1892.
First Lieutenant	Harry M. Loomis, Company C,	May 24, 1892.
First Lieutenant	Sidney M. Leonard, Company D,	June 7, 1892.
First Lieutenant	James C. Bailey, Company A,	July 14, 1892.
First Lieutenant	Arthur B. Jenkins, Signal Corps,	June 20, 1892.
First Lieutenant	Charles E. Johnson, Company F,	Aug. 2, 1892.
Second Lieutenant	Theodore A. Stanley, Company I,	June 23, 1891.
Second Lieutenant	John F. Lehr, Company H,	July 1, 1891.
Second Lieutenant	Thomas P. Hastings, Company B,	Oct. 6, 1891.
Second Lieutenant	William W. Bullen, Company E,	Mch. 14, 1892.
Second Lieutenant	Louis V. Schutz, Company D,	June 7, 1892.
Second Lieutenant	Edwin E. Lamb, Company A,	July 14, 1892.
Second Lieutenant	George W. Ripley, Company F,	July 26, 1892.

SECOND REGIMENT.

Lieut. Colonel	Lucian F. Burpee,	May 3, 1892.
Major	Timothy F. Callahan,	May 25, 1892.
Captain	George G. La Barnes, Ins. Rifle Practice,	June 11, 1892.
First Lieutenant	Rodmond V. Beach, Paymaster,	Jan. 25, 1892.
Captain	William E. Moses, Company A,	June 22, 1891.
Captain	Daniel L. Barber, Company K,	Nov. 17, 1891.
Captain	Wallace E. Beach, Company D,	Dec. 29, 1891.
First Lieutenant	Charles F. McCabe, Company F,	Oct. 27, 1891.
First Lieutenant	Edwin Hart, Company A,	Nov. 23, 1891.
First Lieutenant	James C. Twining, Company D,	Dec. 29, 1891.
First Lieutenant	Laurens Kling, Company B,	Feb. 24, 1892.
First Lieutenant	Oscar L. Bradley, Company I,	Mar. 24, 1892.
Second Lieutenant	Clarence B. Dann, Company F,	Oct. 27, 1891.
Second Lieutenant	James Geddes, Company A,	Nov. 23, 1891.
Second Lieutenant	Henry Norton, Jr., Company K,	Nov. 17, 1891.
Second Lieutenant	Albert F. Laudensack, Company B,	Feb. 24, 1892.
Second Lieutenant	Walter R. Markham, Company H,	Mar. 3, 1892.
Second Lieutenant	Delbert R. Jones, Company I,	Mar. 24, 1892.
Second Lieutenant	Charles S. Schappa, Company E,	Apr. 5, 1892.
Second Lieutenant	Henry F. Morse, Company D,	June 16, 1892.

THIRD REGIMENT.

Colonel	Augustus C. Tyler,	June 22, 1892.
Major	John Armstrong,	July 18, 1892.
Major	Fred A. Fox,	Oct. 8, 1892.
First Lieutenant	Gilbert C. Bishop, Quartermaster,	July 4, 1892.
First Lieutenant	Beverly C. Sanders, Paymaster,	July 4, 1892.
Captain	Lucius H. Fuller, Ins. of Rifle Practice,	July 4, 1892.
Major	Julian La Pierre, Surgeon,	July 4, 1892.
First Lieutenant	Hiram B. Thomson, Ass't Surgeon,	July 16, 1892.
Captain	Martin Heffernan, Company E,	July 14, 1892.
Captain	Henry E. Burton, Company F,	Aug. 4, 1892.
First Lieutenant	John F. McCarthy, Company E,	July 14, 1892.
First Lieutenant	Arthur D. McIntyre, Company G,	July 16, 1892.
First Lieutenant	Albert A. Beach, Signal Corps,	Mch. 25, 1892.
First Lieutenant	John McManus, Company F,	Aug. 4, 1892.
Second Lieutenant	Frank E. Warren, Company F,	Oct. 13, 1891.
Second Lieutenant	Frank W. Rogers, Jr., Company D,	Dec. 1, 1891.
Second Lieutenant	James L. Kingsley, Company C,	Mch. 15, 1892.
Second Lieutenant	Charles Grady, Company E,	July 14, 1892.

FOURTH REGIMENT.

Colonel	Russell Frost,	Jan. '8, 1892.
Major	James Sheridan,	April 5, 1892.
First Lieutenant	Everett Noyes, Quartermaster,	July 19, 1892.
Captain	William H. Holly, Ins. of Rifle Practice,	July 19, 1892.
Captain	Reuben M. Rose, Company F,	Nov. 4, 1890.
Captain	Charles W. Hendrie, Company C,	July 20, 1891.
Captain	Charles B. Moore, Company I,	Mch. 7, 1892.
Captain	John J. Glennon, Company E,	April 27, 1892.
Captain	Charles W. Burpee, Company K,	May 21, 1892.
Captain	Merritt F. White, Company B,	Aug. 9, 1892.
First Lieutenant	Frederick J. Breckbill, Company G,	Feb. 16, 1892.
First Lieutenant	John O'Neil, Company E,	April 27, 1892.
First Lieutenant	Samuel C. Parker, Company K,	May 22, 1892.
First Lieutenant	Albert J. Wilcoxson, Company F,	July 26, 1892.
First Lieutenant	Owen Burns, Signal Corps,	May 11, 1891.
Second Lieutenant	Gilbert L. Fitch, Company C,	Aug. 24, 1891.
Second Lieutenant	Emel J. Walter, Company G,	Feb. 16, 1892.
Second Lieutenant	Robert J. Doyle, Company D,	Feb. 19, 1892.
Second Lieutenant	Frederick H. Masterson, Company K,	May 26, 1892.
Second Lieutenant	John W. Latson, Jr., Company F,	July 26, 1892.

SEPARATE COMPANIES.

First Lieutenant	Edwin B. Freeman,	Second Co.,	Mar. 11, 1892.
Second Lieutenant	Arthur B. Mitchell,	Second Co.,	July 22, 1892.

BATTERY A.

First Lieutenant	Barlow S. Honce,	Dec. 21, 1891.
Second Lieutenant	George T. Fowler,	Dec. 21, 1891.

II. The following-named officers have been reported by the Examining Board as having failed to pass a satisfactory examination ; they will be given an opportunity for re-examination in accordance with the recommendation of the Board :

Captain	James K. Crofut,	Adjutant,	Fourth Regiment.
First Lieutenant	Dennis J. Murphy,	Company B,	First Regiment.
First Lieutenant	George D. Shelton,	Company B,	Fourth Regiment.
Second Lieutenant	William Houlihan,	Company B,	Fourth Regiment.

III. The following-named officers of the NATIONAL GUARD having failed to pass a satisfactory examination before the Examining Board, and not having been recommended for re-examination, their appointments are revoked, and they are discharged from the military service of the State, to date November 3d, 1892 :

First Lieutenant	William H. Coleman,	Company E,	Second Regiment.
Second Lieutenant	John Pender,	Company E,	Fourth Regiment.
Second Lieutenant	William H. Bramhall,	Company I,	Fourth Regiment.
Second Lieutenant	J. Paul Haun,	Company C,	First Regiment.

IV. The following-named officers of the NATIONAL GUARD, having previously been commissioned in the same grade and not being required to be re-examined will be commissioned with rank and date as given herewith :

FIRST REGIMENT.

Captain	Thomas F. Flanigan,	Company B,	Jan. 15, 1892.
Captain	Alexander Allen,	Company F,	July 26, 1892.

SECOND REGIMENT.

Captain	Theodore H. Sucher,	Company E,	Jan. 26, 1892.
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THIRD REGIMENT.

Captain	Charles F. Chaney,	Adjutant,	July 4, 1892.
Second Lieutenant	Clinton A. Winslow,	Company G,	June 4, 1891.

V. The following-named officers of the NATIONAL GUARD having previously held appointments and not commissioned, have been reported by the Examining Board as passing a satisfactory examination, will be commissioned with rank and date as given herewith :

FIRST REGIMENT.

First Lieutenant	Howard A. Giddings,	Signal Corps,	May 8, 1891.
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THIRD REGIMENT.

Captain	George M. Cole,	Adjutant,	Aug. 15, 1891.
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FOURTH REGIMENT.

Captain	Charles W. Burpee,	Adjutant,	Jan. 22, 1892.
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VI. First Lieutenant Francis E. Alden, Company C, Fourth Regiment, having failed to appear before the Examining Board, or to present a satisfactory excuse, his appointment is revoked, and he is discharged from the military service of the State, to date November 3d, 1892.

VII. Major George E. Albee, Brigade Inspector of Rifle Practice, having been excused from appearing before the Examining Board, will hold himself in readiness to be examined at its next session.

VIII. The commanding officer of each company in which a vacancy is created by this order, is hereby ordered to warn the members of the Company to appear at their Armory to make nomination by ballot to fill the vacancy, and in like manner make nomination for any vacancies in the commissioned offices of said Company occurring by reason of the nomination herein ordered, and make return of the nominations so made to this office without delay; transmitting therewith one of his original orders issued in compliance herewith.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, November 3, 1892.

GENERAL ORDERS, }
No. 21. }

I. First Lieutenant W. H. C. Bowen, 5th Infantry, U. S. A., on duty upon the Staff of the Governor of the State, will, during the present drill season, resume inspection and military instruction of the armed forces of the commonwealth, and will be obeyed and respected accordingly.

II. Lieutenant Bowen will arrange, as soon as possible, after consultation with General Haven, Brigade Commander, for evening meetings with the Officers and Non-Commissioned Officers of the Brigade, for the purpose of giving military lectures, or otherwise imparting instruction in drill, discipline, and administration. He will also visit, as often as possible, the several organizations upon their drill nights, and report to the Commander-in-Chief the condition, attendance, interest in, and appreciation of the duty of the occasion, by Officers and enlisted men, and the apparent capacity of Officers and Non-Commissioned Officers for the work they are appointed to perform, *especially* will he observe and report upon, the instruction in and performance of *guard duty*, and the observance of military courtesy by both officers and enlisted men, and to that end may cause guard duty to be the order of the evening with any command he may be visiting.

III. An amended manual of guard duty will be issued from this office as soon as received from the printers, and will be authority until further orders. Captains of companies will at once make requisition for a number of copies sufficient to supply officers and non-commissioned officers of their command. These books will be placed against their property account and must be accounted for as other books issued by the State are. The copies of "Kennon's Manual" now in their possession may be dropped as "worn out in service."

IV. Great good will be sure to follow official contact and consultation with a gentleman whose profession is the "art of war," and whose position demands that he be fully equipped in the customs and requirements of the service.

To get the full benefit of his presence and desire to be of service, needs only interest and effort on the part of members of the Connecticut National Guard.

V. The drill of Tuesday evening, 8th inst., may be omitted by all organizations of the Brigade, the understanding being that the "time" required be made up on the other drill nights of the month.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE,

Hartford, November 16, 1892.

GENERAL ORDERS, }
No. 22. }

I. In accordance with the report of Brigadier-General Commanding, of the State Rifle Match for Regimental Teams of the Connecticut National Guard, held at Hartford October 4, ultimo, in pursuance of G. O. No. 16, c. s., the trophies are awarded as follows:

First prize, Silver Cup, First Regiment. Score, 200 yards, 314; 500 yards, 312; total, 626, p. c. 74.52.

Second prize, Bronze Medallion, Bust of General U. S. Grant, Second Regiment. Score, 200 yards, 301; 500 yards, 309; total, 610, p. c. 72.62.

Third prize, Bronze Statuette of a Roman Soldier, Third Regiment. Score, 200 yards, 309; 500 yards, 300; total, 609, p. c. 72.50.

II. The commanding officers of First, Second, and Third Regiments will return to the Quartermaster-General the State trophies awarded to their organizations by G. O. No. 29, 1891, and the Quartermaster-General will deliver the trophies awarded as above to the commanding officers of the regiments winning the same, who will each receive and receipt therefor and will remain the custodian thereof until further orders from this office, subject to the conditions prescribed in G. O. No. 21, 1888.

III. The members of the First Regiment Team, to each of whom the Quartermaster-General will deliver through the regimental commandant, the State Medal awarded to members of the winning team are : —

Lieutenant-Colonel Alfred L. Thompson, Major John Hickey, Captain William C. Cheney, I. R. P., Second Lieutenant George W. Ripley, Co. F, Second Lieutenant Theodore A. Stanley, Co. I, Sergeant Frank H. Smith, Co. F, Quartermaster-Sergeant Alfred C. House, Co. G, Corporal John P. Cheney, Co. G, Private Henry Green, Co. F, Private William Joyce, Co. G, Private Thomas A. Kimberly, Co. K, Private Henry L. Huntington, Co. K.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

STATE OF CONNECTICUT,

ADJUTANT-GENERAL'S OFFICE

Hartford, November 29, 1892.

GENERAL ORDERS, }
No. 23. }

In consideration of their previous long and efficient service, so much of General Orders No. 3, 1890, A.-G. O., as dishonorably dismisses Colonel William E. Cone, Lieutenant-Colonel Charles E. Thompson, and Major Thomas M. Smith, First Regiment, C. N. G., and dismisses for the benefit of the service Captain George B. Newton, Company F, First Regiment, C. N. G., is hereby rescinded and they are honorably discharged from the military service of the State from the date of the original order, January 22, 1890.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

ADJUTANT-GENERAL'S REPORT.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, November 30, 1892.

GENERAL ORDERS, }
 No. 24. }

I. Changes as follows in the commissioned officers of the CONNECTICUT NATIONAL GUARD have occurred since August 10, 1892:

RESIGNED AND DISCHARGED.

FIRST REGIMENT.

Captain	George O. McLean,	Company E,	Nov. 23, 1892.
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SECOND REGIMENT.

First Lieutenant	William G. Daggett,	Assistant Surgeon,	Sept. 15, 1892.
Captain	William E. Moses,	Company A,	Oct. 15, 1892.
First Lieutenant	Benjamin D. Putnam,	Company H,	Nov. 23, 1892.
First Lieutenant	James C. Twining,	Company D,	Nov. 28, 1892.

THIRD REGIMENT.

Lieutenant Colonel	John H. Morrison,		Oct. 3, 1892.
Captain	George W. Metcalf,	Company I,	Oct. 5, 1892.
First Lieutenant	Samuel Prince,	Company I,	Nov. 2, 1892.
Second Lieutenant	Frank E. Warren,	Company F,	Nov. 23, 1892.

FOURTH REGIMENT.

First Lieutenant	Charles H. Oakes,	Company D,	Aug. 30, 1892.
Captain	Charles E. Doty,	Company D,	Oct. 4, 1892.

APPOINTMENT REVOKED AND DISCHARGED.

FIRST REGIMENT.

Second Lieutenant	J. Paul Haun,	Company C,	Nov. 3, 1892.
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SECOND REGIMENT.

First Lieutenant	William H. Coleman,	Company E,	Nov. 3, 1892.
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FOURTH REGIMENT.

First Lieutenant	Francis E. Alden,	Company C,	Nov. 3, 1892.
Second Lieutenant	John Pender,	Company E,	Nov. 3, 1892.
Second Lieutenant	William H. Bramhall,	Company I,	Nov. 3, 1892.

PROMOTED AND APPOINTED.

FIRST REGIMENT.

Private Charles E. Johnson, of Hartford, appointed First Lieutenant Company F, with rank from August 2, 1892, *vice* Hubbard, resigned.

Private J. Paul Haun, of Rockville, appointed Second Lieutenant Company C, with rank from November 11, 1892, *vice* Haun, discharged.

SECOND REGIMENT.

Private Joseph H. Townsend, Company F, of New Haven appointed, Assistant Surgeon, with rank of First Lieutenant from September 15, 1892, *vice* Daggett, resigned.

John P. Kellogg, of Waterbury, appointed Captain Company A, with rank from October 24, 1892, *vice* Moses, resigned.

THIRD REGIMENT.

Major John Armstrong, of Danielsonville, appointed Lieutenant-Colonel, with rank from October 8, 1892, *vice* Morrison, resigned.

First Lieutenant Henry E. Burton, of Killingly, appointed Captain Company F, with rank from August 4, 1892, *vice* Armstrong, promoted.

First Sergeant John McManus, of Killingly, appointed First Lieutenant Company F, with rank from August 4, 1892, *vice* Burton, promoted.

Captain Fred A. Fox, Company C, of Norwich, appointed Major, with rank from October 8, 1892, *vice* Armstrong, promoted.

Second Lieutenant Henry L. Starr, Third Machine Gun Platoon, of New London, appointed Captain Company I, with rank from October 18, 1892, *vice* Metcalf, resigned.

First Lieutenant Arthur S. Howard, of Norwich, appointed Captain Company C, with rank from October 27, 1892, *vice* Fox, promoted.

Second Lieutenant James L. Kingsley, of Norwich, appointed First Lieutenant Company C, with rank from October 27, 1892, *vice* Howard, promoted.

Sergeant John A. Hagberg, of Norwich, appointed Second Lieutenant Company C, with rank from October 27, 1892, *vice* Kingsley, promoted.

Second Lieutenant Charles A. Miner, of New London, appointed First Lieutenant Company I, with rank from Nov. 8, 1892, *vice* Prince, resigned.

Sergeant Ira J. Brown, of New London, appointed Second Lieutenant Third Machine Gun Platoon, with rank from November 10, 1892, *vice* Starr, promoted.

FOURTH REGIMENT.

First Lieutenant Merritt F. White, of Bridgeport, appointed Captain Company B, with rank from August 9, 1892, *vice* Sanger, resigned.

Second Lieutenant George D. Shelton, of Bridgeport, appointed First Lieutenant Company B, with rank from August 9, 1892, *vice* White, promoted.

First Sergeant William Houlihan, of Bridgeport, appointed Second Lieutenant Company B, with rank from August 9, 1892, *vice* Shelton, promoted.

Second Lieutenant Robert J. Doyle, of South Norwalk, appointed First Lieutenant Company D, with rank from September 6, 1892, *vice* Oakes, resigned.

Private George A. Hoyt, of South Norwalk, appointed Second Lieutenant Company D, with rank from September 6, 1892, *vice* Doyle, promoted.

Addison A. Betts, of Norwalk, appointed Captain Company D, with rank from October 24, 1892, *vice* Doty, resigned.

James Hurley, of Bridgeport, appointed Second Lieutenant Company E, with rank from November 14, 1892, *vice* Pender, discharged.

Henry S. Terrell, of Winsted, appointed Second Lieutenant Company I, with rank from November 15, 1892, *vice* Bramhall, discharged.

II. So much of General Orders, No. 17, 1890 (Par. V), as dismisses Private Matthew H. Barton, Company F, First Regiment, Connecticut National Guard, and disqualifies him from re-enlisting for a period of five years; and so much of General Orders, No. 3, 1891, as dishonorably discharges Privates James W. Dennis, Walter B. Griswold, and William T. Mather, Company F, First Regiment, Connecticut National Guard, has been rescinded at the request of the company commander, approved by regimental and brigade commanders.

Privates Barton, Dennis, and Mather have reported for duty, and Private Griswold has been honorably discharged March 29, 1891, by Special Orders, No. 144, October 11, 1892.

III. Private Edward Monroe, Company I, Third Regiment, Connecticut National Guard, has been discharged from the military service of the State, for the benefit of the service, in accordance with sentence of Field Officers' Court-martial.

IV. The following-named members of the National Guard have been dishonorably discharged from the military service of the State, in accordance with sentence of Field Officers' Courts-martial, viz. :

SECOND REGIMENT.

Company C. Private James J. Shanley, Private Patrick M. Dowd, Private John B. Whalen.

Second Signal Corps. Private Porteus C. Rhodes.

THIRD REGIMENT.

Company B. Private Patrick J. Benson.

Company I. Private William H. Heffernan, Private James Carey.

By order of the Commander-in-Chief.

ANDREW H. EMBLER,

Adjutant-General.

Important Special Orders.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 143. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, December 11, 1891.

I. The Board of Survey appointed by S. O. No. 136, November 14, 1891, to inspect public property, having reported certain blankets, clothing, and camp equipage as unserviceable (as per their report), and recommended that the said property be disposed of, the Quartermaster-General is hereby directed to sell the property so condemned, for cash, at public sale or otherwise, as may be for the best interest of the State, and report the amount received from such sale to this office.

II. The recommendation of the Board regarding the property to be dropped as worthless is hereby approved.

By order of the Commander-in-Chief,
ANDREW H. EMBLER,
Adjutant-General.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 11. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, January 21, 1892.

Permission is hereby granted Company B, Third Regiment, Connecticut National Guard, Captain Daniel Keleher commanding, armed, uniformed, and equipped, to leave this State, January, 21st instant, on a visit to Westerly, R. I.

By order of the Commander-in-Chief,
ANDREW H. EMBLER,
Adjutant-General.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 41. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, March 2, 1892.

Samuel Park, of New London, is hereby appointed Judge Advocate, Third Regimental District, with rank of Major, from March 1, 1892, to fill vacancy caused by the resignation of Major John A. Tibbits.

He will be recognized and respected accordingly.

By order of the Commander-in-Chief,
ANDREW H. EMBLER,
Adjutant-General.

ADJUTANT-GENERAL'S REPORT.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 73. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, May 14, 1892.

I. In accord with recommendation of Colonel Russell Frost, commanding Fourth Regiment, C. N. G., made in response to a communication from this office, dated April 21, 1892, which recommendation is approved by Brigadier-General Thomas L. Watson commanding Brigade, and fully endorsed at these Headquarters as a change every way necessary for the benefit of the service, the location of Company K, Fourth Regiment, C. N. G., is hereby transferred from Stratford to Bridgeport, Conn.

II. The Quartermaster-General is charged with the removal of the public property from the leased armory in Stratford to the State armory in Bridgeport, and the assignment of quarters in the latter armory to said company.

By order of the Commander-in-Chief,
WILLIAM H. TUBBS,
Asst. Adjutant-General.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 88. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, June 13, 1892.

Permission is hereby granted the Putnam Phalanx, Major Orland H. Blanchard commanding, to leave this State under arms, uniformed and equipped, June 17th instant, on a visit to Worcester, Mass.

By order of the Commander-in-Chief,
WILLIAM H. TUBBS,
Asst. Adjutant-General.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. III. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, July 28, 1892.

I. The Staff of the Commander-in-Chief is hereby ordered to report at Camp White, State Military Rendezvous, Niantic, Conn., Saturday, August 13, 1892, fully uniformed, equipped, and mounted, for eight days' duty, in attendance upon the Commander-in-Chief.

II. The Assistant Adjutant-General and Assistant Quartermaster-General will report in like manner for nine days' duty, on Friday, August 12, 1892.

III. The Quartermaster-General will furnish quarters for the Commander-in-Chief and Staff.

By order of the Commander-in-Chief,
ANDREW H. EMBLER,
Adjutant-General.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 117. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, August 1, 1892.

I. The Major commanding the Second Company, Governor's Horse Guards, will detail one sergeant and four men of his command, to report to the Adjutant-General at Camp White, State Military Rendezvous, Niantic, Conn., on Saturday, 13th instant, fully uniformed and equipped, for eight days' orderly and escort duty in attendance upon the Commander-in-Chief and Staff.

II. Major Blakeslee will make requisition for the necessary transportation and quarters, and the non-commissioned officer in charge of the detail will report to the Quartermaster of the Second Regiment, Connecticut National Guard, for assignment of transportation to and from camp.

III. Muster pay-rolls for duty, in accordance with law and regulations, will be rendered on the last day of the encampment by the officer in charge of the detail.

IV. Commandants of organizations in the Fourth Regiment will make requisition for an entire outfit of new blankets.

By order of the Commander-in-Chief,
ANDREW H. EMBLER,
Adjutant-General.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 128. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, August 25, 1892.

Permission is hereby granted the First Separate Company of Infantry, Rhode Island Militia, Captain Robert W. Blunt commanding, armed, uniformed, and equipped, to enter this State September 13th and 14th proximo, on a visit to the city of New Haven.

By order of the Commander-in-Chief,
WILLIAM H. TUBBS,
Asst. Adjutant-General.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 135. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, September 27, 1892.

I. Major E. Henry Hyde, commanding the First Company, Governor's Foot Guard, will assemble his command and report to the Chief of the Captain-General's Staff, at 9 A. M., Tuesday, October 18, 1892, for escort duty to and from Chicago, Ill., upon the occasion of the dedication of the World's Columbian Exposition buildings.

II. Transportation will be provided by the Quartermaster-General of the State.

By order of the Commander-in-Chief,
ANDREW H. EMBLER,
Adjutant-General.

ADJUTANT-GENERAL'S REPORT.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 137. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, September 30, 1892.

Permission is hereby granted the Gate City Guard, Atlanta, Georgia, armed, uniformed, and equipped, to enter and pass through this State October 7th to 18th proximo, en route to and from the Columbian Celebration in New York City.

By order of the Commander-in-Chief,

WILLIAM H. TUBBS,
Asst. Adjutant-General.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 139. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, October 1, 1892.

(Extract.)

I. The commanding officers of the First and Second Companies, Governor's Horse Guard, and Second Company, Governor's Foot Guard, are hereby directed to assemble their commands for one day's drill and parade on such date as they may determine, on or before October 31st instant, forwarding to this office a copy of their company order designating the date of parade, when issued.

By order of the Commander-in-Chief,

WILLIAM H. TUBBS,
Asst. Adjutant-General.

STATE OF CONNECTICUT.

SPECIAL ORDERS, }
No. 143. }

ADJUTANT-GENERAL'S OFFICE,
HARTFORD, October 10, 1892.

I. The Staff of the Commander-in-Chief will report to the Adjutant-General at Union Depot, Hartford, October 18, 1892, at 9 o'clock A. M., fully uniformed and equipped, for duty upon the occasion of the dedication of the World's Columbian Exposition buildings, at Chicago, Ill.

II. Major William G. Hubbard, commanding First Company, Governor's Horse Guard, is hereby ordered to detail two members of his command, fully armed, uniformed, and equipped, to report to the Adjutant-General at the Union Depot, Hartford, at 9 o'clock A. M., Tuesday, October 18, 1892, as orderlies in attendance upon the Commander-in-Chief during the dedication of the World's Columbian Exposition buildings at Chicago, Ill.

By order of the Commander-in-Chief,

WILLIAM H. TUBBS,
Asst. Adjutant-General.

Circular.

STATE OF CONNECTICUT.

ADJUTANT-GENERAL'S OFFICE,

Hartford, Oct. 20, 1892.

CIRCULAR.

The report of First Lieutenant Wm. H. C. Bowen, 5th Infantry, U. S. A., on duty at General Headquarters at "Camp White," is hereby published for the information and guidance of Members of the Connecticut National Guard. The attention of Officers and Non-Commissioned Officers is especially called to his remarks.

NEW HAVEN, CONN., Aug. 29, 1892.

To the Adjutant-General of the State, Hartford, Conn.

SIR:—I have the honor to submit the following report regarding the encampment of the troops at Camp White, Niantic, Conn., during the eight days, Aug. 13-20, 1892.

I arrived at camp at about 9.30, A. M., of Aug. 13th, and immediately paid my respects to the Brigade Commander, Brig.-Gen. George Haven, C. N. G., who received me very courteously.

None of the troops had arrived at the time, the first to come being the Gatling Gun detachment of the Third Regiment, at 10.45; Company H, Second Regiment, came at 11.08; Battery A, at 11.20; the Third Regiment at 12.50; first separate company at 1.48; Second Regiment at 1.58; Fourth Regiment at 2.06; second separate company at 3.05; and the First Regiment at 3.14.

The following table will show the strength of the Brigade, the number of absentees, and the phenomenally large percentage present on the first day, which strength was held almost continuously throughout the encampment:

	PRESENT.		TOTAL PRESENT.	ABSENT.		TOTAL ABSENT.	AGGREGATE.	PER CENT. PRESENT.
	Officers.	Men.		Officers.	Men.			
General Headq'rs,	11	—	11	1	—	1	12	91.67
Brigade Headq'rs,	10	3	13	0	00	00	13	100.00
Battery A, . . .	5	76	81	0	2	2	83	97.59
First Regiment, .	41	606	667	1	62	63	710	91.13
Second Regiment,	41	662	703	1	20	21	724	97.10
Third Regiment, .	34	483	517	1	20	21	538	96.10
Fourth Regiment,	35	486	521	0	30	30	551	94.56
First Separate Co.,	3	50	53	0	13	13	66	80.30
Second Sep. Co.,	3	42	45	0	8	8	53	84.91

From the foregoing it will be seen that all organizations, except separate companies, were well above ninety per cent. ; particular attention being invited to the splendid showing of the Second and Third Regiments, and of the Battery.

Owing to the new drill regulations, the Guard Mounting and other formations, on Saturday and Sunday, were very bad ; by Monday they had become much smoother, and during the remainder of the week they were of such a nature that few criticisms could be made, and those few were on minor points, many of them being differences of opinion only, showing conclusively the capacity for learning possessed by officers and men of the Connecticut National Guard, when interested in their work.

Far different was the *Guard Duty* ; there was no improvement in that from start to finish. The work of the sentinels was wretched. Honors were rendered fairly well, especially at the guard-house at the entrance of camp, where there was a great improvement over that of last year ; but the individual work of the different sentinels was very bad, with a few notable exceptions, but these exceptions only brought out in a worse light the very indifferent performance of this most important duty of the great majority of the men performing Guard Duty.

It is quite altogether certain that in the matter of Guard and Sentry duty, the Connecticut force is a long way from possessing even a fair amount of proficiency, and this is only due to the carelessness, to put it mildly, of a large portion of the officers (commissioned and non-commissioned), and particularly of those detailed for duty with the Guard, to exercise the proper degree of supervision over the men in their charge, and to properly instruct them. A case in point ; a sentry on one of the most conspicuous beats in the camp, who could not fail to be seen by every visitor who entered the grounds, had quit his piece and was leaning against the fence, and engaged in conversation with comrades and civilian friends ; the officer of the guard passed within a few feet of the offender, looked at him — and went his way without a word, either of caution or of condemnation. On another occasion I saw the Officer of the Guard playing cards with members of his Guard. These were by no means exceptional cases.

Naturally, under such conditions, men become heedless and careless, and the organizations to which they are attached are misjudged in the minds of the public. Too much of this kind of guard duty was permitted and performed, especially on the flanks of camp where they (the sentinels) were wholly or in part screened from public view.

In the rare instances where the errors of omission and commission were pointed out to them and explained by their officers, the sentinels cheerfully corrected them.

Here was a duty which could have been learned at home or at the Armory, perfectly, and captains should be held to a strict accountability : officers and men seemed to know little or nothing of the general duties of the Guard (let alone the special duties), and the outside line was forced again and again by men from the inside wishing to get out.

More attention was given to salutes this year than last, but still there is room for improvement ; here I must quote from my report of last year, with the request that it be carefully read, considered, and *remembered*.

"There is not enough respect shown for officers. When men don a uniform their individuality becomes extinct, and they should forget familiarity and honor the offices, if they do not honor the men who occupy them. The militiamen are ready and willing to learn, and all they need is instruction in this respect. The fault lies with the officers and non-commissioned officers, who, as a rule, overlook this matter and are careless. The non-commissioned officers are not strong and forcible enough.

"If they exacted respect it would be gladly given, for, I repeat, the men are anxious and willing to obey orders and pay respect, only they do not know how and need teaching."

"The business of government is to protect property, guard the life and liberties of society, and protect the individual in his rights."

For this purpose we now have the National Guard of the several States to stand at the back of the civil power, and how well it has performed its duties can be learned from the results at Homestead, in the mountains of Tennessee, and at Buffalo. The time has come when the various States should recognize the importance of maintaining a *perfect militia*.

All one has to do in these days, to learn the *value* of the National Guard is to read the daily papers. Compare the results of 1892, with those of 1877, and then let croakers say, if they dare, that it does not pay to have an efficient military force to assist the civil authorities.

Let all guardsmen emulate the example of Captain Anderson, the Tennessee hero.

It will undoubtedly strike the military man of experience, familiar with Connecticut's camps, that if the annual encampment is to be a camp of thorough instruction, the work needs to be remodeled and somewhat changed. Much of the holiday feature should be eliminated to produce a perfect military camp; improvements in many respects would follow.

The new drill regulations were found to be more simple and sensible than Upton, but still requiring considerable application to master. The winter's study and instruction in the armories should produce good results, following the experiences of the summer's encampment.

The National Guard has advanced materially (in this State particularly) during the past few years, not only in the important particular of saluting, but in general deportment and discipline on duty, under arms: it has yet considerable to learn in regard to conduct and deportment *while off duty in uniform*.

Taking one consideration with another, General Haven has no reason to be dissatisfied with the eight days' tour of duty, a repetition of which would bring much better results. He has a good working staff, who readily grasped a thorough appreciation of their duties, and worked well together.

On the whole, Connecticut's militia this year made a creditable showing, and, as in the past, indicates a fitness to measure up favorably with the National Guard of more pretentious commonwealths. Every true citizen has a just pride in the efficiency of the Guard, and in the welfare of the Brigade, and all are deeply interested in all that goes to make up a soldier's life.

Camp White was a working camp, to maintain which cost the citizens a large amount of money. This money is cheerfully given and whatever personal enjoyment goes with its expenditure is graciously conceded, but in return they expect, what every true soldier should be eager to give, strict obedience to orders, the recognition of superior authority, an honest desire to learn the science of modern warfare, and a readiness to respond to the call for duty whenever and wherever it is necessary.

The best citizenship is recruited from the ranks of the State Militia, for no man, however careless he may be, can serve his time without gaining new information in regard to his individual responsibilities and the dignity of his commonwealth.

If in the ranks, he gains and learns the important lessons of self-control and obedience; if an officer, that of self-reliance and dignified deportment.

Any loss of interest in the National Guard and any wane in its popularity should be deplored, for all classes share in its *esprit de corps*.

Something should be done by the State Legislature in regard to feeding the troops, and thus take from the hands of irresponsible caterers this most important branch of military hygiene.

The State should feed the troops, and should be held responsible that they are properly fed: the troops are provided with tents, bedding, etc., by the Quartermaster's Department; when they are sick they are cared for by the Medical Department; when they are hungry they should be fed by the Commissary Department.

The attention of all is invited to the system in vogue in Pennsylvania.

Another subject which needs serious attention in the C. N. G. is rifle firing, and especially practice at firing at unknown distances. The State should provide suitable ranges, well equipped with pits, targets, range-house, etc., so that all kinds of firing could be had; plenty of ammunition should be allowed, and gallery practice should be adopted for the armory during the winter season, the standard of the army should be the standard for the State, and the same text-book should be used.

In closing I desire to state that my criticisms are not made in any spirit of malice or ill-will, but rather with the hope that now that errors have been pointed out they will be corrected, and that next year's encampment will show a perfect tour of duty, not only in guard-duty and drill, but also in discipline.

Very respectfully,

Your obedient servant,

WM. H. C. BOWEN,

First Lieut. 5th Inf. U. S. A., I. and M. I. State of Conn.

Every criticism, made in the most kindly spirit, and only because of his interest in our volunteer organization, and for its good, is endorsed by the Adjutant-General from personal observation. While the work of the Brigade in the formations and evolutions of the new drill regulations was excellent—taking into consideration the limited time had for study and practice,—the matter of “Guard duty,” it is to be regretted, seemed to have been ignored almost entirely, and the remarkable feature was the little, if any, improvement apparent during the whole eight-days tour of duty.

This condition should not exist in an organization possessing the zeal and intelligence of the Brigade of Connecticut National Guard. I have no doubt a great effort will be made by officers and men during the coming drill season to correct this condition of affairs, and that the next opportunity for a public display of this duty will show as nearly perfect an exhibition as need be.

ANDREW H. EMBLER,
Adjutant-General.

REPORT

OF THE

QUARTERMASTER - GENERAL,

OF THE

STATE OF CONNECTICUT,

TO THE

COMMANDER - IN - CHIEF,

FOR THE

Fiscal Period Beginning July 1, 1891, and
Ending September 30, 1892.



HARTFORD, CONN.:

PRESS OF THE FOWLER & MILLER COMPANY, 341 MAIN STREET.

1893.

AUDITORS' REPORT.

To His Excellency Morgan G. Bulkeley, Governor :

This certifies that we, the Auditors of Public Accounts, have examined the accounts of Wm. B. Rudd, Quartermaster-General, for the fiscal term from July 1, 1891, to September 30, 1892, inclusive, compared the vouchers therewith, and find the same correct, showing a balance in the hands of the Quartermaster-General, on the 30th of September, 1892, of ten thousand four hundred and five dollars and eighty-two cents (\$10,405.82).

That we have also examined the account pertaining to the special appropriation of four thousand dollars (\$4,000), made by the General Assembly of 1889, for a military road at Niantic, compared the vouchers therewith, and find the same correct, showing a balance in the hands of the Quartermaster-General of said account amounting to three hundred and forty-nine dollars and eighty-nine cents (\$349.89).

That we have also examined the State Camp Ground, the arsenal buildings, and all the property therein, and find that it appears to have been properly cared for ; and are of the opinion that the duties of the Department have been faithfully and efficiently performed.

D. WARD NORTHROP,	} <i>Auditors of</i>
BENJAMIN P. MEAD,	

REPORT.

QUARTERMASTER-GENERAL'S OFFICE,
HARTFORD, Sept. 30, 1892.

To His Excellency Morgan G. Bulkeley, Governor and Commander-in-Chief:

I have the honor to submit herewith my report of transactions of this Department, together with an inventory of the military stores and an account of the moneys received and disbursed during the fiscal period ending September 30, 1892.

STATE CAMP GROUND.

No extensive improvements have been made to the Camp Ground during the last year. The store-house used by this Department for the storing of camp and garrison equipage has been moved and enlarged.

I have to suggest floors for the mess buildings. This improvement has long been needed, and I have requested that the sum of \$2,500 be appropriated to that end.

CAMPS EMBLER AND WHITE.

This report covers two encampments of the Connecticut National Guard, those of 1891 and 1892.

No special mention need be made concerning these encampments. As usual, the transportation has been furnished. The troops have arrived in camp on schedule time, and their departure has been equally prompt. This Department has to thank the transportation companies for the usual facilities they have extended to the State, and for the promptness and security in transporting so large a number of men without delay or accident.

UNIFORMS.

The uniforms of the Connecticut National Guard are in a fair condition. New trousers will have to be provided, also new fatigue caps. Seven hundred blouses have been drawn from the United States Government ; eighteen hundred more are required to fully equip the Guard. All the old pattern blouses should be condemned.

ARMS AND EQUIPMENTS.

I have again to call attention to the arms in the hands of the troops.

Steps should be immediately taken to secure from the United States Government suitable rifles. Three regiments are armed with the Peabody rifles, which are of no service—new parts cannot be obtained, and each year more or less are becoming absolutely unserviceable. The equipments are in fine condition.

CAMP EQUIPAGE.

The State is now fully equipped with canvas and all that goes to make the troops comfortable in the field. All the regiments are supplied with new army blankets.

STATE ARMORIES.

With the exception of the Armory located in New Haven, the State Armories are in good condition. The floor in the New Haven Armory should be relaid immediately. The estimated cost is \$8,000, and this sum has been inserted in the estimate for expenditures.

FINANCIAL.

I have to call your attention to the apparent large expenditures during the last fiscal period. The period covered by this report is fifteen months, from July 1, 1891, to September 30, 1892. During this period two encampments have been held, and the disbursements embrace all the expenses connected with them.

The change of the fiscal year from June 30th to September 30th went into effect in 1892, thus extending the length of the period from twelve to fifteen months. The three months from July 1st to September 30th embrace a period in which the largest disbursements are made during the year.

SOLDIERS' AND SAILORS' FUNERAL EXPENSES AND HEADSTONES.

During the last fiscal period this Department has approved 155 applications for general expenses, amounting to \$5,425, and has caused to be erected 282 headstones.

In closing my official connection with the Quartermaster's department of the State, I wish to extend to the members of the National Guard my thanks for the pleasant relations that have existed during my term of office, and to those gentlemen associated with me, Col. H. C. Morgan, Mr. M. J. Wise, and Captain G. A. Cornell, and all others in the Department, the assurance that their services have been of much value to myself and to the State.

Very respectfully,

Your obedient servant,

WILLIAM B. RUDD,

Quartermaster-General.

STATE OF CONNECTICUT, IN ACCOUNT WITH

1892.	DR.	
Sept. 30.	To Cash Expended :	
	Care of Public Property,	\$8,623 28
	Office Expenses,	1,272 80
	Contingent,	31 90
	Arsenal Repairs,	253 99
	Freight and Express,	603 54
	Connecticut National Guard,	19,527 72
	Transportation,	13,654 11
	Uniforms,	5,679 84
	Uniform Repairs,	785 93
	Officers' Compensation,	2,364 71
	Uniform Compensation,	1,680 00
	Care of Arms,	1,034 32
	Rifle Ranges,	1,690 54
	Armory Rents,	8,427 42
	Hartford Armory,	4,121 60
	Bridgeport Armory,	1,884 15
	New Haven Armory,	3,506 47
	New London Armory,	1,743 58
	New Britain Armory,	1,643 98
	Norwalk Armory,	1,324 88
	Waterbury Armory,	1,607 80
	Niantic Camp Ground,	5,360 64
	Ammunition,	2,821 41
	Interest,	684 64
		<u>\$90,329 25</u>
	To Balance on hand,	10,405 82
		<u>\$100,735 07</u>

BRIG-GEN. WILLIAM B. RUDD, QUARTERMASTER-GENERAL.

1892.	CR.	
Sept. 30, By Cash received from Sales,		\$39 85
	Orders of Comptroller,	92,631 36
	Missing property,	233 54
	Care of Public Property,	6 00
	Contingent,	29 40
	Freight and Express,	26 20
	Connecticut National Guard,	438 21
	Transportation,	3,420 97
	Uniforms,	48 85
	New Haven Armory,	1,400 00
	Hartford Armory,	950 00
	Bridgeport Armory,	4 25
	New London Armory,	165 00
	New Britain Armory,	515 00
	Norwalk Armory,	380 00
	Niantic Camp Ground,	173 91
	Ammunition,	272 53
		<hr/>
		\$100,735 07

STATE OF CONNECTICUT, IN ACCOUNT WITH

DR.

1892.

SPECIAL ACCOUNT.

May 21.	To Cash reimbursed Governor Morgan G. Bulkeley,	\$45,000 00
	Paid Interest,	684 64
		<u>\$45,684 64</u>

1892.

SPECIAL ACCOUNT.

Sept. 30.	To Cash Expended :	
	Uniforms, Equipments, and Military Stores, .	\$1,702 95

1892.

SPECIAL ACCOUNT.

Sept. 30.	To Cash Expended,	\$185 51
	To Balance on hand,	349 89
		<u>\$535 40</u>

BRIG.-GEN. WILLIAM B. RUDD, QUARTERMASTER-GENERAL.

CR.

GOVERNOR MORGAN G. BULKELEY.

July 23, 1891.	By Cash advanced by	
	to	Governor Morgan G. Bulkeley,
April 21, 1892.		. . . . . \$45,000 00
1892.		
May 21.	By Interest,	. . . . . 684 64
		<u>\$45,684 64</u>

1892.

GOVERNOR'S GUARD.

Sept. 30.	By Cash orders of Comptroller, \$1,702 95
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1891.

MILITARY ROAD AT NIAN TIC.

July 1.	By Cash Balance, 535 40
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WILLIAM B. RUDD, QUARTERMASTER-GENERAL.

TENTS AND EQUIPMENTS.

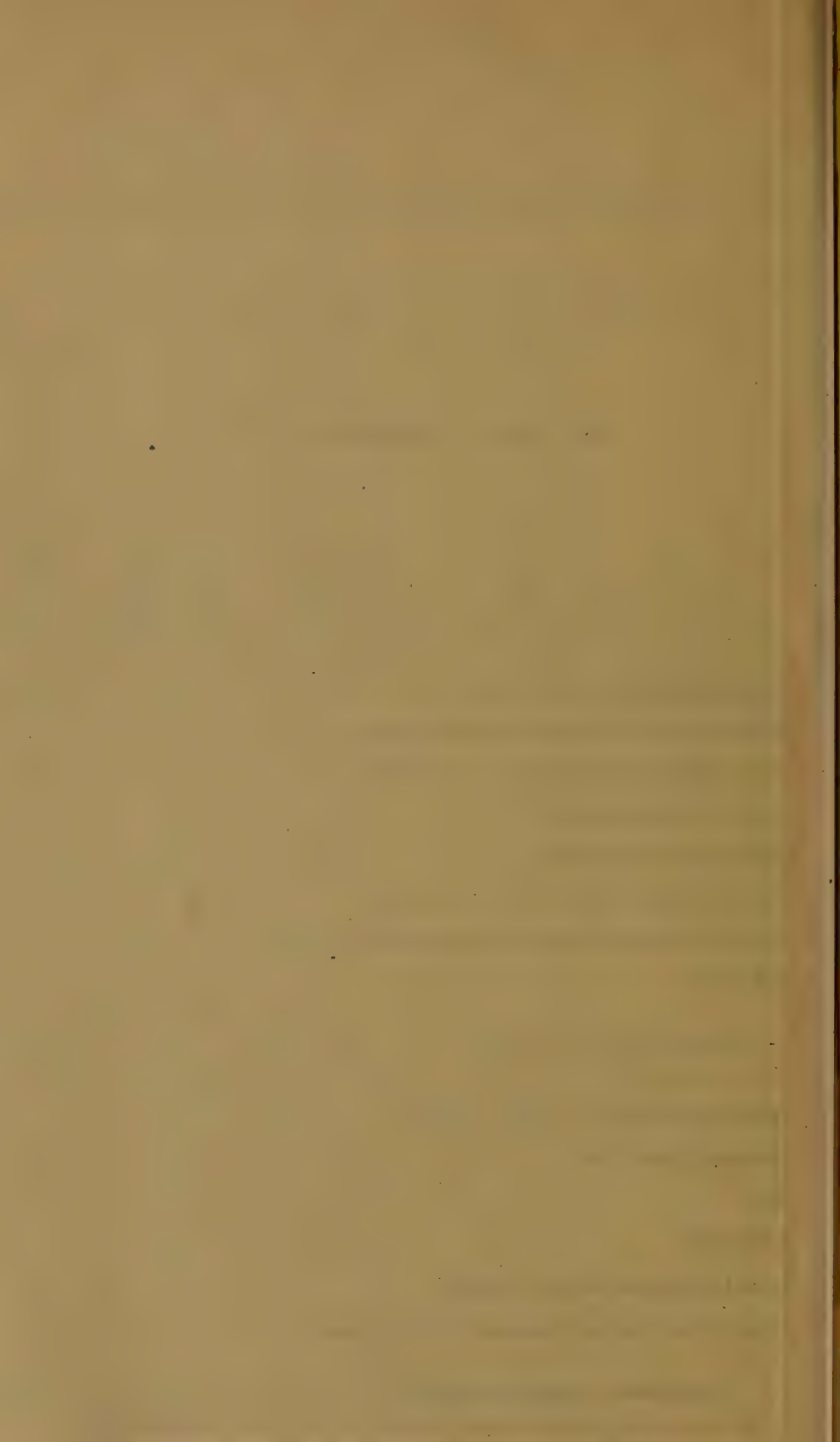


TABLE 2.

PROPERTY RETURN.

WILLIAM B. RUDD, Quartermaster-General.
CLASS B. CLOTHING.

JULY 1, 1891, TO SEPTEMBER 30, 1892.	UNIFORMS.						CHEVRONS.										COAT, HELMET, AND CAP TRIMMINGS.								MISCELLANEOUS.																					
	Uniform Coats.	Trousers.	Helmets, complete.	Blouses.	Forage Caps, complete.	Overcoats.	Quartermaster Sergeant, Reg't'l, pairs.	Brigade Trumpeter, pairs.	Chief Trumpeter, pairs.	Drum Major, pairs.	Chief Musician, pairs.	Hospital Steward, pairs.	Sergeant Major, pairs.	Sergeant, First, pairs.	Sergeant, Quartermaster, Company, pairs.	Sergeant, Signal Corps, pairs.	Sergeant, pairs.	Corporal, pairs.	Corporal, Signal Corps, pairs.	Arm Brassards.	Devices, Signal Service pairs.	Devices, Trumpeters, pairs.	Uniform Coat, numbers.	Helmet Plumes.	Helmet Cords.	Helmet Spikes.	Helmet Eagles, complete.	Helmet Buttons.	Forage Cap, letters.	Forage Cap, numbers.	Forage Cap, devices.	Helmet, numbers.	Blankets, assorted.	Blankets, U. S.	Blanket Cases.	Overcoat cases.	Buttons, State, large.	Buttons, State, small.	Buttons, Governor's Staff—Vest and Coat.	Scarlet Coats for Governor's Foot Guard.	Buff Trousers for Governor's Foot Guard.	Buff Vests for Governor's Foot Guard.	Blue Trousers for Governor's Foot Guard.			
Remaining on hand, July 1, 1891,	143	253	98	100	197	85	2	..	4	5	..	2	2	2	3	2	13	18	2	2	9	44	304	118	110	130	935	93	5	1446	105	42	10	748	628	185			
Received from Connecticut National Guard,	370	778	327	785	487	204	2	..	3	2	6	7	10	59	2½	3	5	1153	48	6	6		
Received from purchase,	130	581	156	433	351	58	2	..	2	1	1	1	6	200	5	13	50	200	300	3950	100	4608	4752	29	12	12	43			
Received from U. S. Government,	700	1200			
Taken up,	2	5½	23		
Received at Camp White,	715			
Returned from U. S. Government,	244	120	
Total to be accounted for,	643	1612	581	2018	1035	347	2	4	4	10	2	2	2	9	11	2	23	80	2	2	23	47	504	10	13	168	110	130	1135	393	3955	100	3314	1353	71	16	5600	5500	185	29	12	12	43			
Issued to Connecticut National Guard,	486	943	433	924	578	300	2	..	5	8	10	15	71	1	18	6	39	5	13	1	44	94	3033	130	1209	9	8	1292	806		
Issued to 1st Company Governor's Foot Guard,	112	29	12	12	43	
Sold,	8	161	6	171	218	2	..	1	6	7	5	768	164	174	
Expended,	8	9	2	..	2	2	203	94	40	1091	299	134	100	1	16	17	
Issued at Camp White,	715		
Issued to U. S. Government for Blouses,	3744	4320
Total issued, expended, dropped, and sold,	494	1104	439	1215	805	300	4	..	7	2	2	..	9	10	21	78	1	23	6	242	5	13	95	..	40	1135	393	3167	100	1614	1209	9	8	5216	5317	29	12	12	43			
Remaining on hand September 30, 1892,	149	508	142	803	230	47	2	..	4	3	2	..	1	2	2	2	2	2	1	41	262	5	..	73	110	90	788	1700	144	62	8	384	183	185	

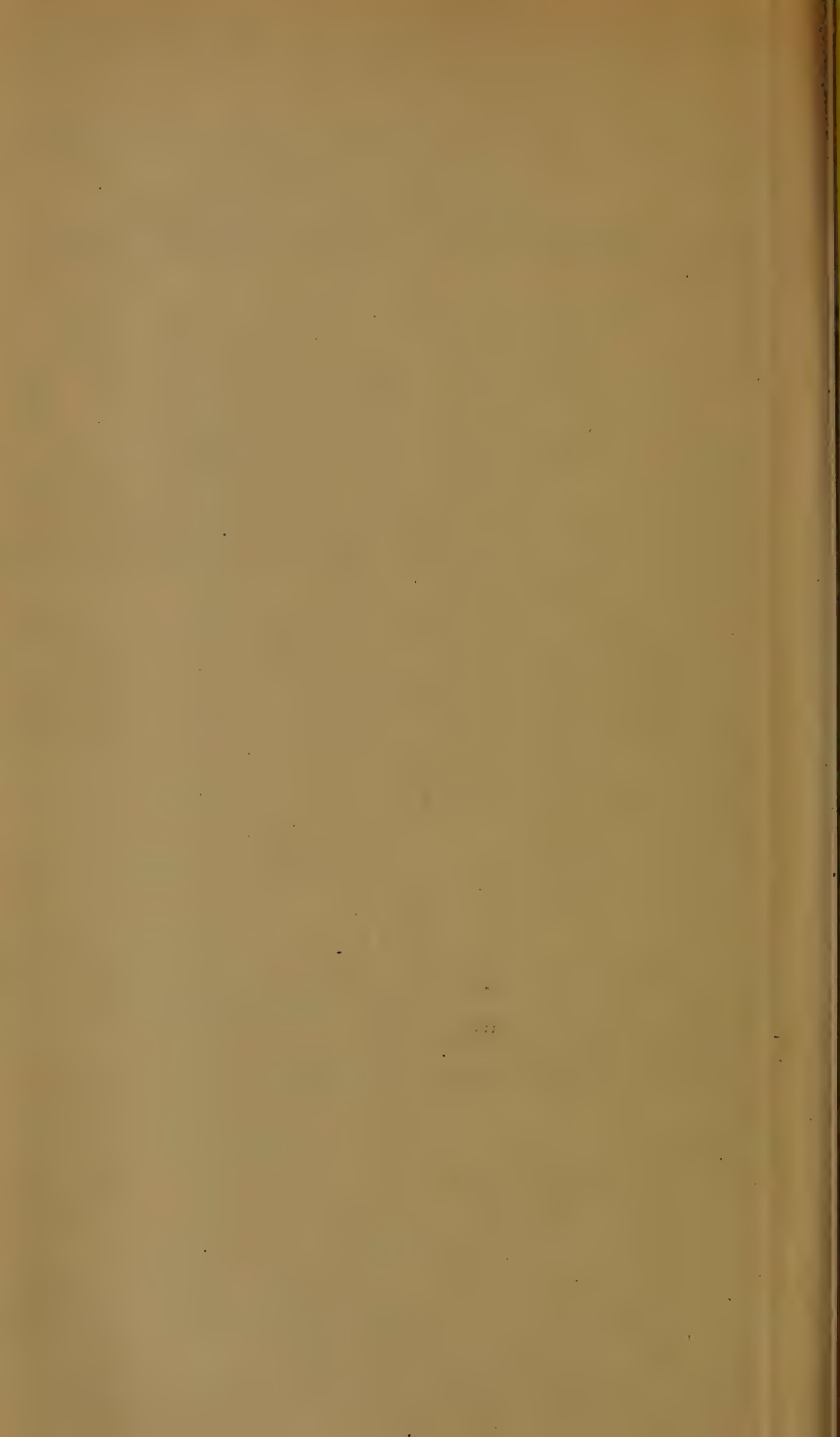


TABLE 3.

PROPERTY RETURN.

WILLIAM B. RUDD, QUARTERMASTER-GENERAL.

CLASS C. ORDNANCE AND ORDNANCE STORES. NO. 1.

[illegible]

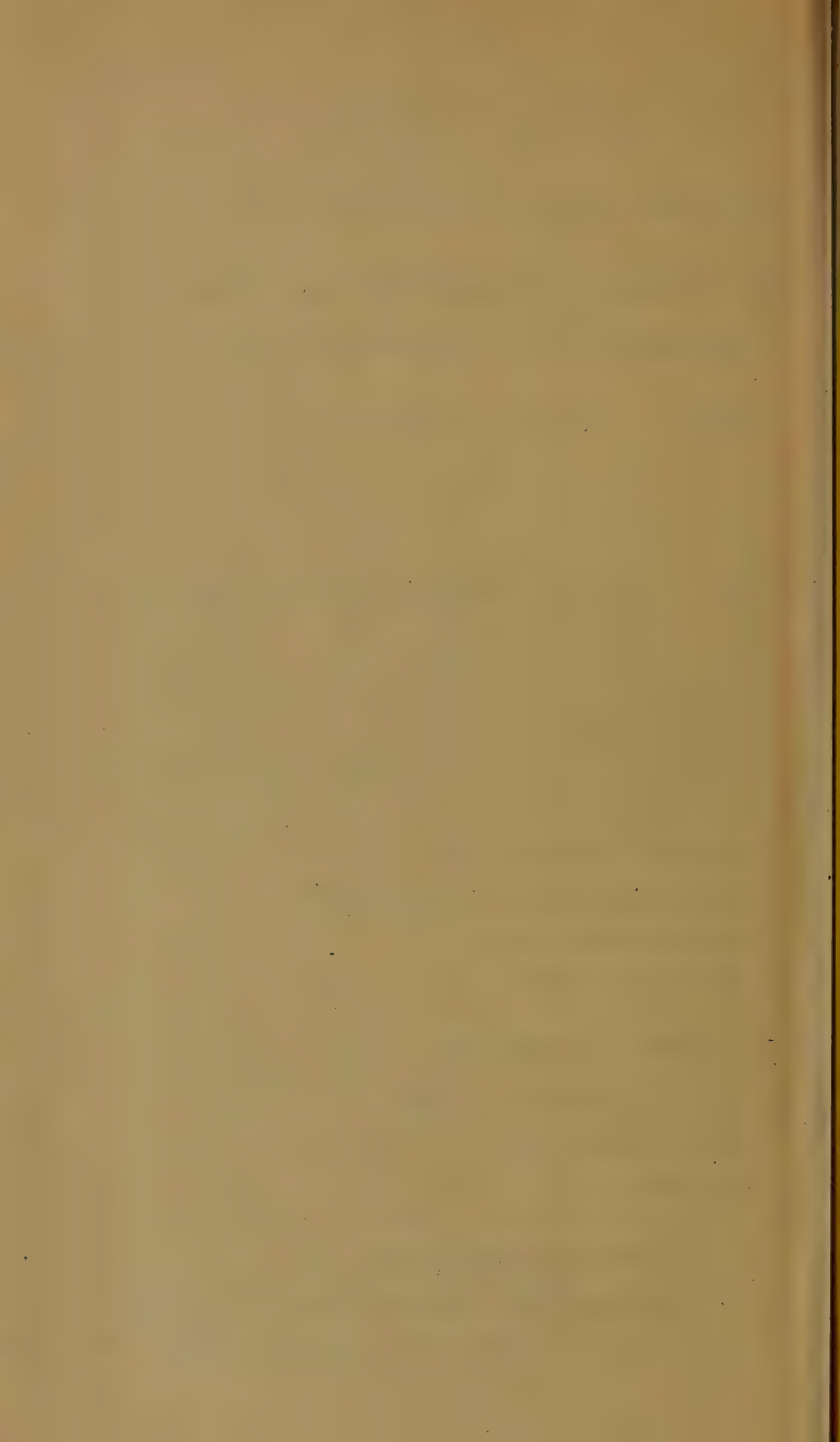


TABLE 4.

PROPERTY RETURN.

WILLIAM B. RUDD, Quartermaster-General.

CLASS C. ORDNANCE AND ORDNANCE STORES, NO. 2.

JULY 1, 1891, TO SEPTEMBER 30, 1882.		SMALL ARMS AND ACCOUTREMENTS.																																																				
		RIFLES.										SMOOTH-BORE.	BAYONETS.				REVOLVERS.	SWORDS.	ACCOUTREMENTS.																																			
		Peabody Breech-Loading Rifles, cal. .45.	Springfield B.-L. Rifles, cal. .45.	Springfield B.-L. Rifles, cal. .45, new model.	Whitney Rifled Musket, cal. .58.	Mississippi Rifled Musket.	Norfolk Rifled Musket, cal. .58.	Flint-Lock Rifled Musket.	Sharps' Rifle, 36 in. barrel.	Spencers' Rifle.	Colt's Revolving Rifle, cal. .56.	Sharps' Carbine.	Windsor Rifle.	Cadet Muskets.	Flint-Lock Muskets, trophies.	Flint-Lock Muskets, Breech-loader.	For Peabody B.-L. Rifles, cal. .45.	For Cadet Muskets.	For Springfield B.-L. Rifles, cal. .45.	For Flint-Lock Muskets, trophies.	For Springfield, cal. .58. Sabre.	Colt's, cal. .45.	Cavalry Pistols.	Artillery Sabres.	N.-C. S. Swords.	N.-C. O.	Cartridge Boxes.	Bayonet Scabbards.	Waist Belts.	Waist Belt Plates.	Artillery Sabre Belts.	Artillery Sabre Belt Plates.	N.-C. Staff Sword Belts.	N.-C. Staff Sword Belt Plates.	N.-C. Staff Throgs.	Holsters.	Knapsacks.	Haversacks.	Canteens.	Music Pouches.	Signal Kits, Co.	Signal Kits, Reg'tl.	Hunter's Hatchets.	Gun Slings.	Cases, Equipment Packing.	Cases, Gun Packing.	Cases, Pistol Packing.	Skirmishing Bugles.	Bugle Cords and Tassels.	Flags for Signal Kits, extra.	Band Waist Belts and Plates.	Band Shoulder Belts.		
Remaining on hand July 1, 1891,	11	37	77	1	1	1	1	1	1	1	1	1	44	1	41	..	355	24	2	1	96	1	42	5	..	25	96	4	197	..	4	4	4	36	89	2029	2472	..	18	7	30	20	..	21	3	..	5					
Received from Connecticut National Guard,	190	78	8	184	..	70	1	1	231	199	188	250	..	1	1	1	..	191	1	..	9	2	11	..	3	3				
Received from purchase,	112	112	212	184	12	12	47	20	20	20				
Received at Camp White,	816					
Received from Grand Army Posts,	1			
Received from Sons of Veterans,	20	20	1		
Taken up,	1	1	1			
Total to be accounted for,	201	115	85	1	1	1	1	1	1	1	1	21	44	1	225	20	425	24	2	1	96	1	42	6	1	368	407	404	631	12	12	6	6	6	36	327	2029	3288	20	19	7	30	29	2	34	3	3	3	5	20	20			
Issued to Connecticut National Guard,	134	79	62	134	..	135	5	..	213	235	246	301	12	12	5	5	5	10	269	10	2	20	..	1	..	2	10	..	3	3	..	20	20					
Issued at Camp White,	850				
Sold,	4	4	5	10	
Expended,	1	2	1	..	62	13	4	1	
Issued to 1st Company Governor's Foot Guard,	112	112	112	112	22
Total issued, expended, and sold,	134	79	62	134	..	135	5	1	331	352	363	485	12	12	5	5	5	10	304	10	852	20	..	5	..	2	10	1	3	3	..	20	20					
Remaining on hand September 30, 1892,	67	36	23	1	1	1	1	1	1	1	1	21	44	1	91	20	290	24	2	1	96	1	42	1	..	37	55	41	146	1	1	1	26	23	2019	2436	..	19	7	25	29	..	24	2	..	5				

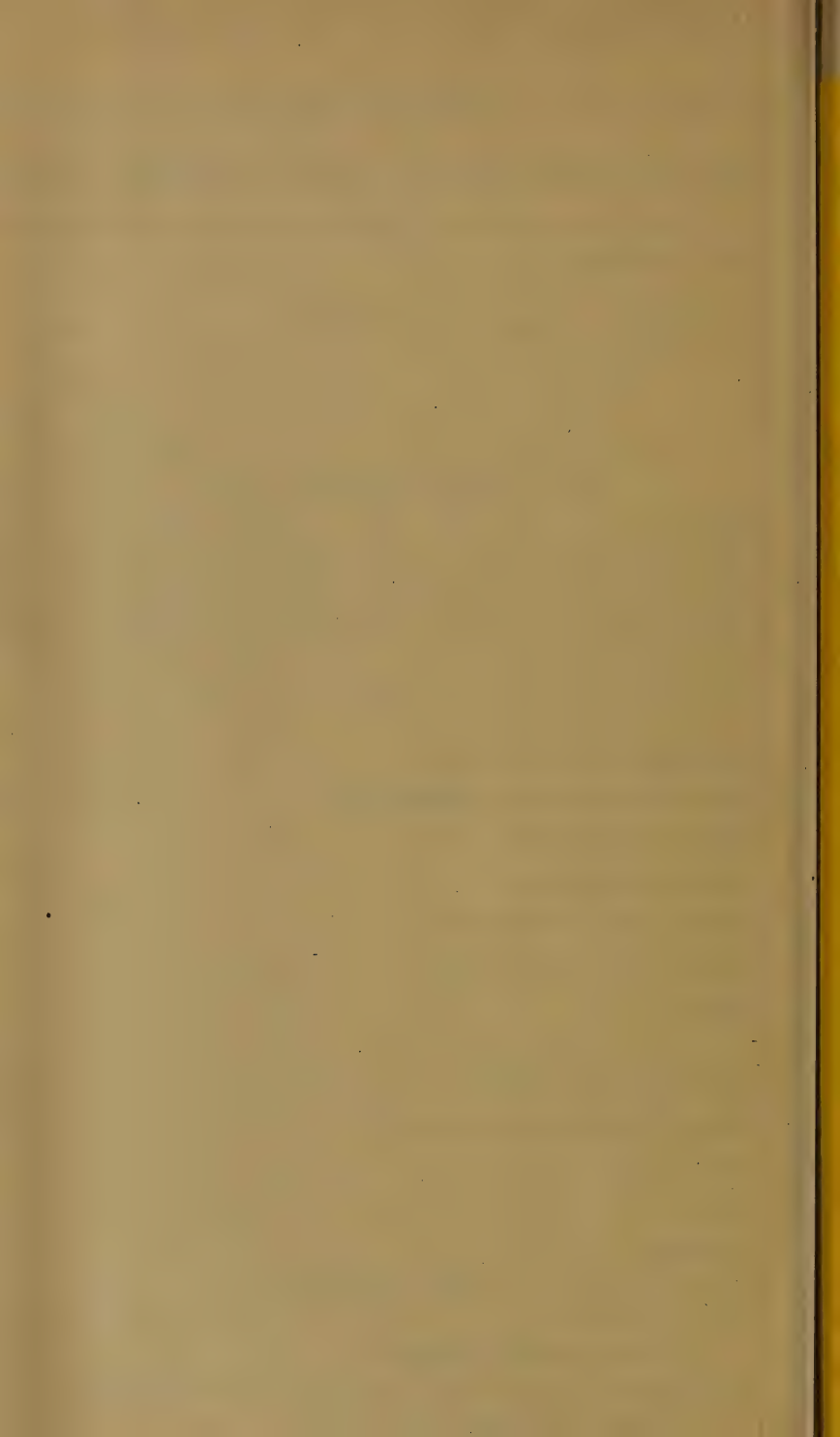


TABLE 5.

PROPERTY RETURN.

WILLIAM B. RUDD, Quartermaster-General.

CLASS C. ORDNANCE AND ORDNANCE STORES, NO. 3.

JULY 1, 1891, TO SEPTEMBER 30, 1892.										AMMUNITION.										TARGETS.				STATE DECORATIONS.									STATE PRIZES.												
										FOR ARTILLERY.														FOR SMALL ARMS.			SHARP-SHOOTER.			MARKSMAN. FIRST CLASS.			MARKSMAN.			STATE RIFLE MATCH.									
										12-pdr. Shell for Steel Gun.	12-pdr. Conical Shot, cal. 4.58.	Absterdam Shells.	Shells, Plaster.	Case Shot, 3-inch Guns.	Shot for 10-inch Rodman Guns, Plaster.	Friction Primers.	Rifle Powder, pounds.	Mortar Powder, pounds.	Cannon Powder, pounds.	Cartridge Bags for 3-in. Guns.	Cartridge Bags, 12-pdr. Guns.	Cartridge Bags for Rodman Guns.	Cartridge Bags for Mortars.	Time Fuzes.	Fuze Plugs.	Hexagonal Powder.	Cartridges, Metallic Ball, cal. .45.	Cartridges, Metallic Blank, cal. .45.	Cartridges for Pistols. Ball.	Target Houses, Wood.	Target Butt-Plates, Iron.	Targets.	Target Patches.	X Badges, Silver.	V Badges, Bronze.	Badges, Gilt.	X Bars, Silver.	V Bars, Bronze.	Bars, Gilt.	X Badges, Silver.	V Badges, Bronze.	Badges, Gilt.	X Bars, Silver.	V Bars, Bronze.	Bars, Gilt.
Remaining on hand July 1, 1891,	24	100	50	..	50	25	1114	495	200	300	108	398	3	17	19	100	70,145	14,200	488	54	177,300	1	1	3	2	1	1	7	2	
Received from Connecticut National Guard,	3,810	1	..	24	1	1	
Received from United States Government,	200	200	300	50,000
Received from purchase,	1000	500	500	..	75	50,000	126,000	2000	..	3	258	9	20	16	7	37	30	2	13	49	4	30	76	13	144	12	136	13	1	
Taken up,	20	1	
Total to be accounted for,	24	100	50	20	50	25	2114	995	400	300	608	398	78	17	19	300	300	173,955	140,200	2488	1	3	336	177,300	10	20	16	8	40	32	2	13	50	4	31	83	13	145	12	138	1	1	13	1	
Issued to Connecticut National Guard,	150	100	106,260	1	3	262	104,080	9	19	13	7	34	26	2	12	49	4	30	75	13	145	11	132	1	1	12	1	
Sold,	59	145	58	14,900	31	1	
Expended at Camps (2),	1231	700	200	300	350	..	57	17	..	154	300	117,200
Total issued, expended, dropped, and sold,	1290	995	200	300	450	58	57	17	..	154	300	121,160	117,200	1	3	293	104,080	9	19	13	7	34	26	2	12	50	4	30	75	13	145	11	132	1	1	12	1		
Remaining on hand September 30, 1892,	24	100	50	20	50	25	824	200	158	340	21	..	19	146	52,795	23,000	2488	43	73,220	1	1	3	1	6	6	..	1	1	8	1	6	1	..	

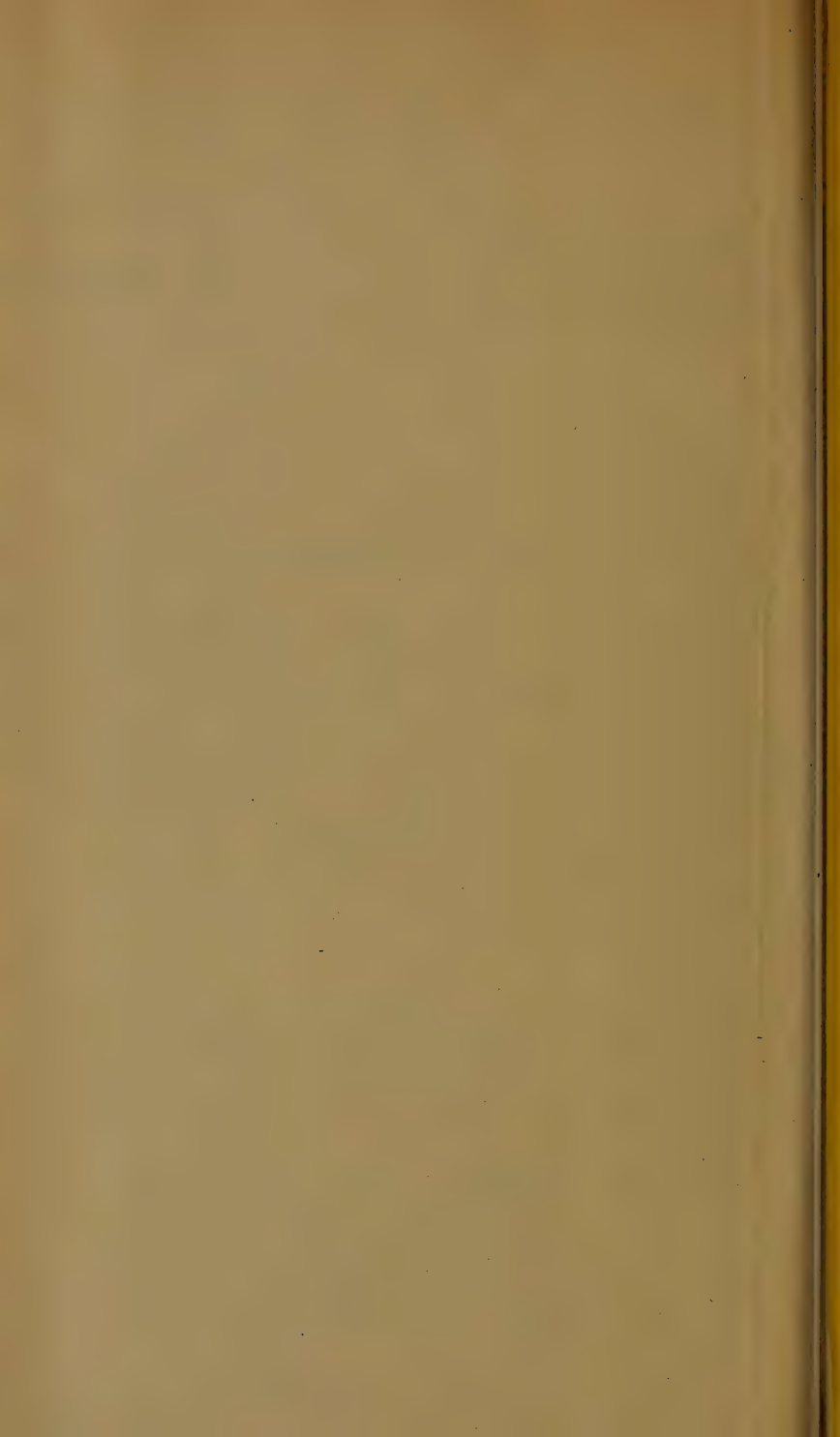


TABLE 6.

PROPERTY RETURN.

WILLIAM B. RUDD, Quartermaster-General.

CLASS C. ORDNANCE AND ORDNANCE STORES, NO. 4.

[illegible]

TABLE 7.

PROPERTY RETURN.

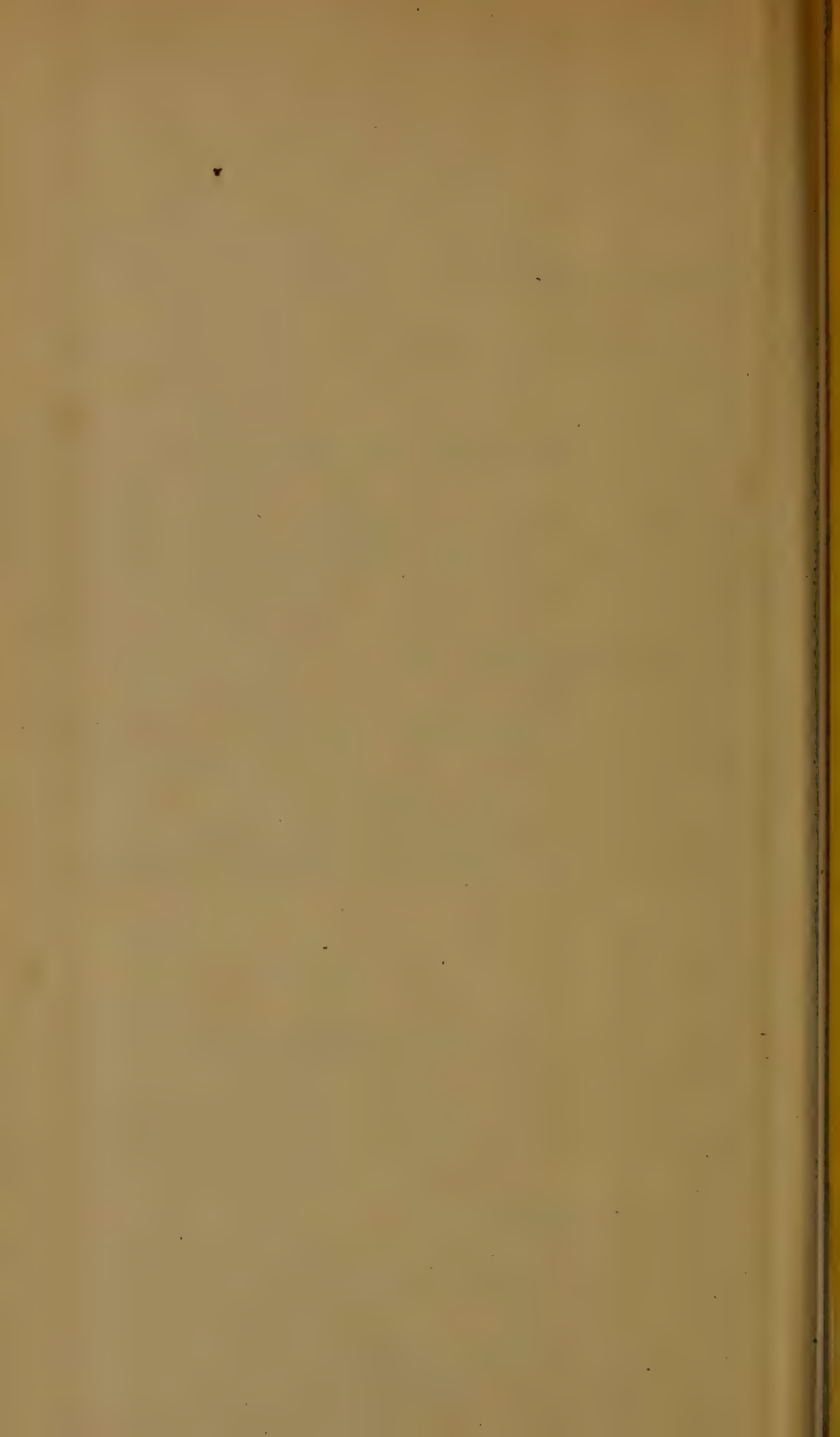
WILLIAM B. RUDD, QUARTERMASTER-GENERAL.

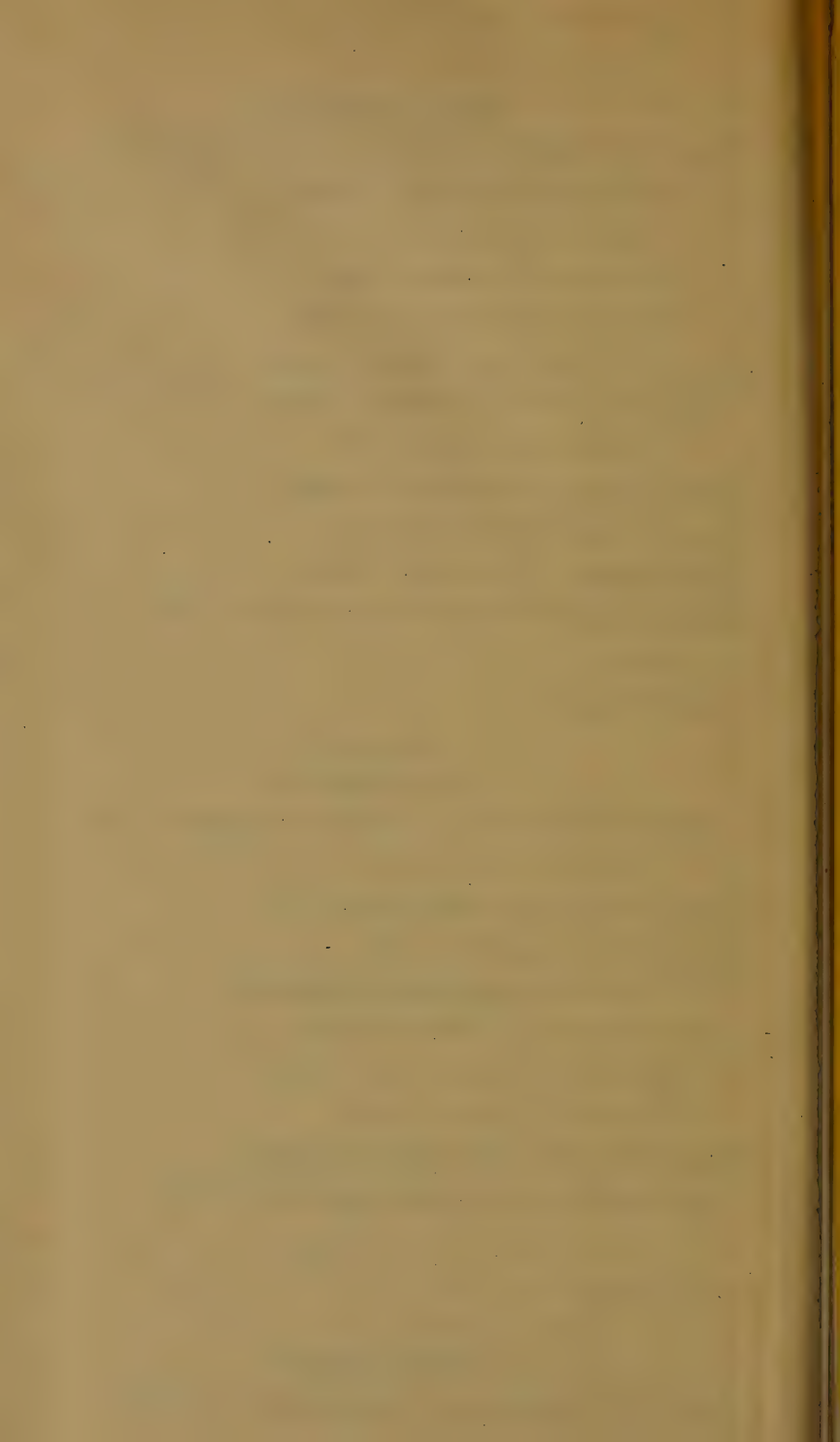
CLASS D. QUARTERMASTER'S STORES.

JULY 1, 1891, TO SEPTEMBER 30, 1892.

TABLE WARE AND KITCHEN UTENSILS.

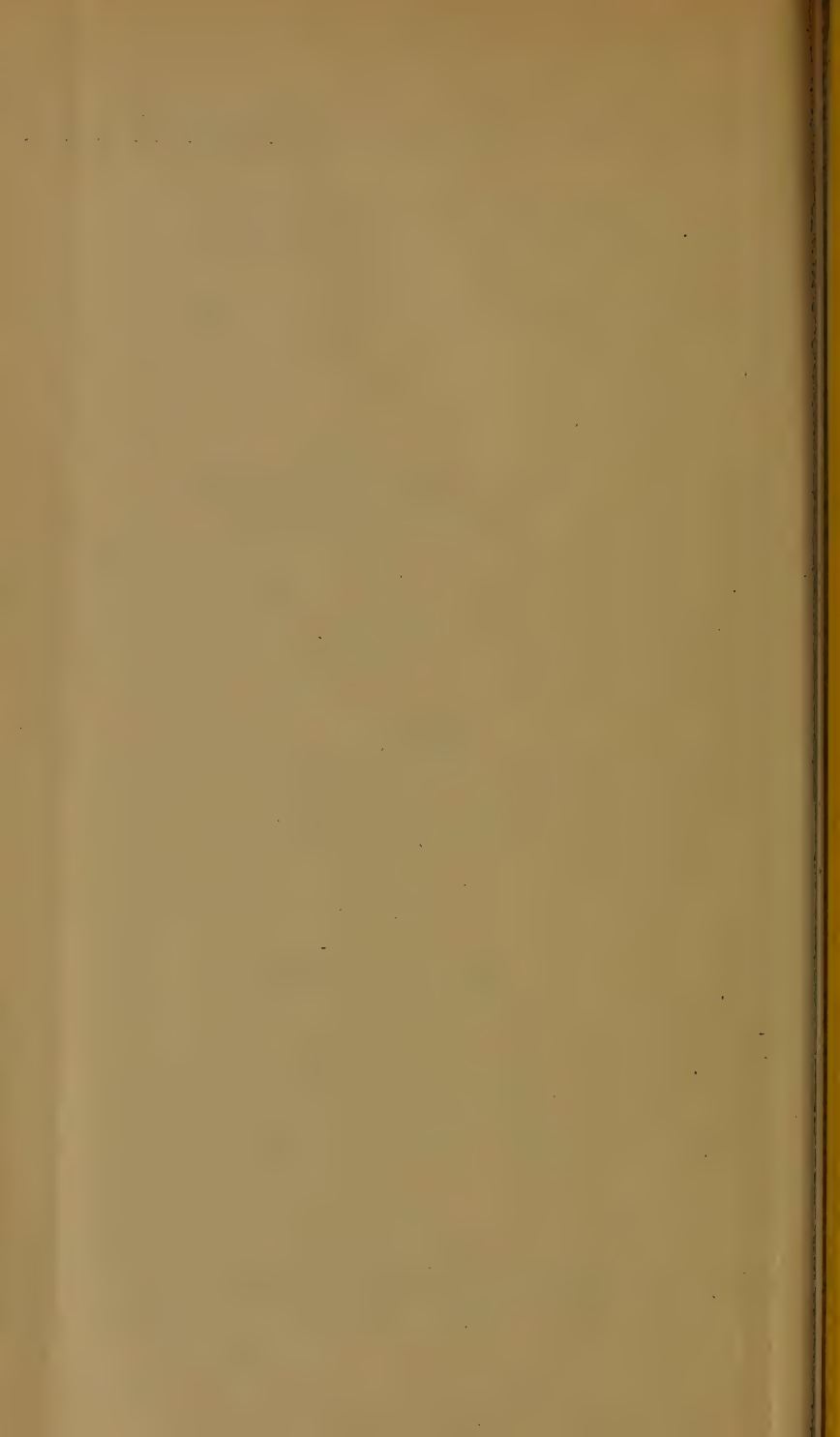
JULY 1, 1891, TO SEPTEMBER 30, 1892





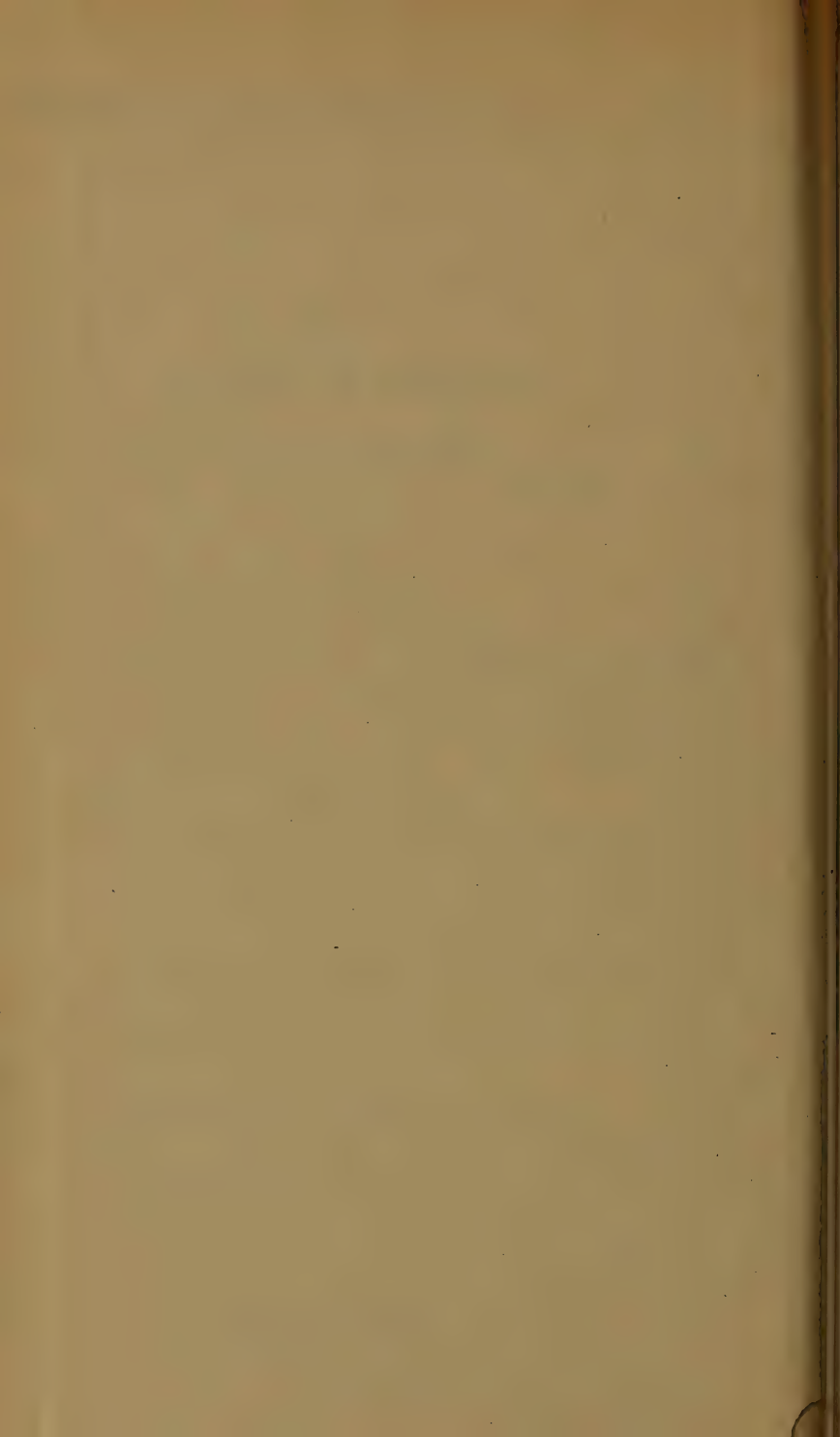
WILLIAM B. RUDD,
Quartermaster-General.

WILLIAM B. RUDD, Quartermaster-General.		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
Battery Headquarters, Guilford, Capt. Arthur S. Fowler,		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
1st Platoon, Guilford, Lieut. Barlow S. Honce,		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
2d Platoon, Branford, Lieut. James T. Reynolds,		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
Total,		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
1st Platoon, Hartford, Lieut. Henry Avery,		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
2d Platoon, New Haven, Lieut. William H. Sears,		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
3d Platoon, New London, Lieut. Henry L. Starr,		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
4th Platoon, Bridgeport, Lieut. George P. Rand,		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
Total,		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
Total Battery A and Machine-Gun Platoons,		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			
		Battery A.																																								Machine-Gun Platoons.																Total Battery A and Machine-Gun Platoons,			



Quartermaster-General.

[illegible]



ANNUAL REPORT

OF THE

SHELL-FISH COMMISSIONERS.



STATE OF CONNECTICUT.

1893.



HARTFORD, CONN.:

PRESS OF THE CASE, LOCKWOOD & BRAINARD COMPANY.

1893.

REPORT.

To the Governor and General Assembly of the State of Connecticut:

The Shell-fish Commissioners respectfully present a report for the two years ending October 31, 1892, in accordance with the provisions of Section 2316 of the General Statutes. Chapter CCXXXI of the Public Acts of 1889 provides that after July 1, 1891, the fiscal year shall end on the thirtieth day of September.

The financial statement will therefore include the twenty-seven months between July 1, 1890, and September 30, 1892, and will be made in two parts, the first embracing the twelve months ending June 30, 1891, for which an appropriation had been made by the General Assembly of 1889, and the second, the fifteen months ending September 30, 1892, for which no appropriation was made, in consequence of the failure of the General Assembly of 1891 to transact any business.

It should be borne in mind that while the receipts of the Shell-fish Commission very largely exceed the disbursements, these receipts are not available to defray the expenses incurred, but are all sent to the Treasurer of the State.

The Commissioners draw the necessary funds from the Treasurer, on orders from the Comptroller, to whom all vouchers for expenditures are sent. The financial statement will be found at the conclusion of the report.

During the two years ending October 31, 1892, fifty-two applications for oyster grounds, covering twenty-four hundred and ninety and three-tenths acres, were made to the Commissioners, and upon these and a few made previously, thirty-eight deeds, embracing fourteen hundred and forty-six and seven-tenths acres, were granted, and the money received for them sent to the State Treasurer.

The total receipts at the office for the year ending June 30, 1891, were \$7,362.46, and the total disbursements for the same

period, including the pay and expenses of the Commissioners were \$4,103.95, a net surplus of receipts over disbursements of \$3,258.51.

For the fifteen months ending September 30, 1892, the total receipts were \$10,330.10, and the total disbursements, \$1,983.60, a net surplus of receipts over disbursements of \$8,346.50.

It should be stated here, however, that the Comptroller has refused to recognize the clerk and two of the commissioners, and has refused them all compensation for services during the fifteen months under consideration. Details of the receipts and disbursements will be found in the financial statement.

The last two years have been very prosperous years with the oyster-men. In both years the "set" of young oysters has been more than usually abundant, and business has generally been good. The star fishes, the greatest enemies of the oyster, seem to have been less prevalent, and when they have appeared, the improved methods of capturing them have prevented the serious results of former raids. A very important decision has been rendered by the Supreme Court relating to the tenure of oyster-grounds, which seems to insure to the owners of such property an absolute right to the product of their industry. The case was one where an individual deliberately and intentionally took oysters from a piece of ground which had been designated by the Shell-fish Commissioners in accordance with the laws of the State, to a party who had afterwards sold and transferred it to another, and the second party was in possession. The party taking the oysters was arrested, and when prosecuted made the defense that the ground in question was a "natural oyster-bed," and consequently the designation was void. The Supreme Court sustained the owner of the ground, and as the decision is of such vital importance to all oyster-cultivators in the State, the full text of it will be found in the Appendix of this report, and also descriptions of all the natural oyster-beds within the jurisdiction of the State, as fixed by the General Assembly in 1885, and afterwards confirmed in Section 2328 of the General Statutes of 1888.

Many of the oyster-growers are not entirely familiar with the boundaries of these natural oyster-beds, and find it very inconvenient to consult the General Statutes for information. There

has therefore been an increasing demand that the commissioners should publish an accurate description of them in one of their reports, which are accessible to all, and a copy of which is readily obtainable for reference.

Constant inquiry is being made as to the law which governs the natural oyster-beds of this State, as to who may and who may not work upon them. For the information of the general public, and those immediately interested, the statutes relating to the subject are here given with a statement of the penalties for violation.

WHO MAY WORK ON CONNECTICUT NATURAL OYSTER-BEDS.

Revised Statutes, Sec. 2403. No person shall take, rake, gather, or collect, by means of dredges or otherwise, any oysters, shells, or shell-fish, in any of the waters of this State, on board of any boat or vessel, *for himself or any employer*, unless *he and his employer are at the time and have been for six months next preceding*, actual inhabitants or residents of this State, and any boat or vessel so used, with its tackle, apparel, and furniture, may be seized and proceeded against in the same manner as provided in Section 2400.

WEIGHT OF DREDGE ALLOWED.

Revised Statutes, Sec. 2404. No person shall use in dredging with any sailing vessel on any of the natural oyster, clam, or mussel beds of this State, any dredge or other contrivance weighing more than thirty pounds, exclusive of the bag or net, but it shall be lawful to dredge shells or shell-fish by steam power upon any private designated grounds by the owner thereof, in any of the waters of the State.

PENALTIES.

For the violation of Section 2403 the penalty is the seizure of the boat, furniture, tackle, etc., etc., and if found to have been used in violation of law, its sale to pay all legal charges, and the balance to go one-half to the person who made the seizure and one-half to the town in which the seizure was made.

The sheriffs, deputy sheriffs, and constables of all towns "shall," and any other person "may," make seizure of boats or

vessels in which persons are working in violation of the law, and any person on board such boat or vessel obstructing such seizure shall be fined not more than one hundred dollars or imprisoned not more than six months, or both.

The penalty for the violation of Section 2404 is a fine of not more than one hundred dollars or imprisonment not more than six months, or both.

SUMMARY.

The law may be summed up thus :

Only persons for the six months preceding inhabitants or residents of this State can work, for themselves or others, upon the oyster-beds of the State.

No dredge weighing more than thirty pounds can be used on such beds, and steam dredging is allowed only on private beds by the owners thereof.

Persons dredging contrary to law, not being residents as required of this State, are liable to the seizure and forfeiture of whatever boat they are working in or upon, and any person resisting such seizure is liable to fine and imprisonment, or both.

Any citizen of the State, wishing to work on the natural oyster-beds, can hire any boat for that purpose not a steam boat, but he must not employ upon such boat the owner thereof, or any other assistant, not inhabitants of this State as required by law, under penalty of seizure and forfeiture of such boat and its belongings.

As a consequence of the good "set" of the last two years, constant inquiry is made for available ground not yet designated, and those who already own desirable pieces find a ready sale for them.

The "set" has not only been general on the designated beds, but the natural oyster-beds of the State have also been thoroughly covered, and it is no uncommon sight to see two hundred sailing craft on the Stratford bed at one time, all engaged in dredging for the young oysters, which find a ready market as soon as gathered. Thus the "natural growers," who are not capitalists, participate in the general good fortune, and reap a harvest with their more wealthy brothers.

A list of the owners of oyster-grounds within the jurisdiction of the State, with the number of acres belonging to each on the

first day of November, 1891, is given in connection with the list of oyster-steamers used in Connecticut waters.

A number of changes have occurred since that date, some ground having been sold, and some surrendered to the State, but that is the latest date at which the Commissioners have a complete record of those liable to taxation. The new list for 1892 cannot be made up until long after the time required by law for this report to be printed.

SURRENDER OF OYSTER GROUNDS.

Section 6 of the original act of 1881, establishing a State commission for the designation of oyster grounds, provided that, "when, after the occupancy and cultivation of any grounds designated as aforesaid by the grantee or his legal representatives, it shall appear to said commissioners that said grounds are not suited for the planting or cultivation of oysters, said grantee, upon receiving a certificate to that effect from said commissioners, may surrender the same or any part thereof, not less than one hundred acres, to the State, by an instrument of release of all his right and title thereto, and shall, on delivery of such instrument to the said Commissioners, receive their certificate of said release of said grounds, the location and number of acres described therein, which shall be filed with the State Treasurer, who shall pay to the holder the sum of one dollar for every acre of ground described in said release, when said sum has been paid therefor to the State."

This Section (6) was afterwards transferred to the General Statutes of 1888, as Sec. 2320.

The oyster-growers in 1881, under the promise of a return of their money in case of an unprofitable investment, made applications for many acres of ground in that portion of Long Island Sound where no previous designations had been made. This was particularly true of the waters lying between the town of Madison and the eastern boundary line of the State.

After the most careful efforts for a series of years, oyster culture in this part of the State has proved a failure. Either the constituents of the water, or the condition of the bottom, or the action of the tides, or perhaps a combination of all three,

seems to render the locality unsuited for the breeding and growth of oysters.

The legislature of 1889 made an appropriation of \$10,000 (see page 179 of Public Acts of 1889) to meet the demands of those surrendering designations under the provisions of the law above quoted.

Section 2322 of the Revised Statutes provides that all surrenders of oyster grounds, under Section 2320, shall be made within eight years, if the grounds were granted prior to July 1, 1884, and within five years, if granted since that date. Section 8 of Chapter CC, of the Acts of 1889, which took effect August 1, 1889, provides that no ground designated after that date shall be surrendered to the State, unless such release is made without charge or expense to the State.

Since the last report, only one surrender of oyster ground has been made under the old law, by which the owner is entitled to receive from the State one dollar per acre for the same ground for which he originally paid the State \$1.10 per acre. This surrender was made by W. H. Hoyt & Son, on Feb. 16, 1891, and is probably the last that will be made under that law. Under Section 8, of Chap. CC, of the laws of 1889, eight hundred and thirty-five acres have been given up by owners without expense to the State, and are now once more open to the prospector for new ground. A list of these with the dates and names of former occupants is here given.

Date.	Name.	Residence.	No. of Acres.
1891.			
March 19,	G. & F. A. Williamson,	Norwalk,	10.
March 20,	Henry Peters,	Greenwich,	50.
March 21,	Charles Peters,	Greenwich,	5.
June 22,	Cole & Hulse,	Stamford,	12.6
June 30,	Homer W. Porter,	Fairfield,	51.6
September 5,	Benedict & Beardsley,	Orange,	102.8
October 15,	J. F. & A. T. Averill,	Branford,	100.
October 31,	C. H. & J. H. Webb,	Stamford,	27.
December 18,	Benton & Averill,	Branford,	100.
1892.			
January 30,	Garrett F. Decker,	Bridgeport,	79.2
January 30,	Garrett F. Decker,	Bridgeport,	8.9
February 27,	Paul D. Beach,	Branford,	50.
May 9,	W. W. & R. L. Laforge,	Fairfield,	90.3
May 9,	W. W. & R. L. Laforge,	Fairfield,	47.6
June 25,	Daniel M. Smith,	Orange,	100.
			835.

TAXATION OF OYSTER GROUNDS.

Under the provisions of the new law, the assessment of oyster grounds within the exclusive jurisdiction of the State was made by Mr. Frederick Botsford, Clerk of Shell-fisheries. He used the former assessment made by the Commissioners of Shell-fisheries as a basis of his action, and made such alterations as seemed to him warranted by the present condition of the grounds, increasing the value of some and decreasing that of others. After he had completed his valuation of the oyster grounds, the Shell-fish Commissioners sent notices to all of the owners that they would meet as a Board of Relief on certain specified days, and hear all persons who felt aggrieved by the action of the assessor. Quite a number of them appeared on the dates appointed and asked for reductions in some of the assessments. Mr. Botsford was present at these meetings, and generally, after a careful consideration of each case, the Commissioners were able to agree upon figures which were satisfactory to all interested. There are, however, in the oyster business, optimists and pessimists, as in almost all other branches of industry, and it is possible that all were not entirely pleased. It would be too much to expect of merely human beings, that all should be satisfied with the work of those designated by law to fix the value of their property for the purposes of taxation. The amount of taxes collected during the year, ending June 30, 1891, was \$6,049.57, and for the fifteen months ending September 30, 1892, \$9,427.10, all of which has been sent to the State Treasurer, and receipted for by him.

ENGINEER.

Section 7 of Chapter CC, of the laws of 1889, provides that not more than two hundred dollars shall be paid in any one year for the services of an engineer, when required by the State.

It is the intention of the law that all expenses pertaining to the purchase and survey of oyster-ground designations shall be paid by the parties applying for them.

There is, however, an amount of work required to be done on the maps of the office, both in adding new designations, and removing those where the grounds have been surrendered, as

well as the general care of the buoy books with the changes required, which can only be done by a skilled engineer. The Commissioners also frequently need the advice of an engineer; in fact, the work of the commission could not be properly done without an engineer any more than without a clerk.

INSPECTORS OF MUD-DUMPING.

Sections 2382 and 2385 of the General Statutes provide, that in all cases where dredging operations are to be carried on in any of the harbors of the State where oyster-grounds have been located or designated, the Commissioners shall establish a dumping-ground, and appoint a suitable person to accompany each boat towing or carrying the mud, whose duty it shall be to see that the mud is deposited on said dumping-ground and no where else.

Section 2384 of the General Statutes is as follows :

“The person so appointed to accompany such boat shall be allowed a sum not exceeding two and one-half dollars per day for such service, to be paid by said Commissioners and charged as other expenses of said commission.”

It will be noticed that the Commissioners have no option in this matter. They must appoint the inspector of mud-dumping, and they must pay him for his labors and charge the amount as other expenses of the Commission. They cannot know in advance how much or how little dredging there is to be done during the two years, and consequently cannot very closely estimate the amount of money necessary. Your Commissioners would suggest that \$2,000 be appropriated for this purpose for the next two years. If it is not all needed, the balance can be returned to the Treasury at the end of the period.

PRESERVATION OF LANDMARKS.

The signal stations (called in the appropriation bill “landmarks”) are structures erected upon prominent portions of the shore, and serve as triangulation points in the hydrographic work of the engineer. It is by means of these that the location of designations is fixed, and the places to set buoys determined. It is absolutely necessary that these signals should be suitable for the purpose, and that they should be maintained in good condition. Section 2412 of the General Statutes authorizes the

Commissioners to lease grounds for this purpose for a period not exceeding ten years. Some of these leases will soon expire, and it is desirable to renew them for as long a time as possible. Occasionally it has happened that the point occupied by one of these stations has been bought by some gentleman, whose intentions were to erect a fine summer residence in its immediate vicinity.

In such cases, the signals are only allowed to remain on condition that they shall be made ornamental to the surrounding property. Generally, the Commissioners have no difficulty in agreeing upon the form and appearance of the new signal, and one is erected which proves satisfactory to all interested.

The small appropriation for the preservation of landmarks should be included among the others to be accounted for by the Shell-fish Commissioners.

THE OYSTER INDUSTRY.

According to the report of the Commissioner of Labor Statistics, for the year ending May 1, 1889, the amount of capital invested in the oyster business in the State of Connecticut was \$3,322,311, the receipts (value of catch and product) were \$1,232,146, the wages paid to employes were \$263,562, the number of men employed was 1,024, and the number of vessels engaged 453. These figures indicate that the oyster industry is a very important one, and well worthy of the care and consideration of the State. Much has been done during the last ten years to establish it upon a permanent basis. A central office in New Haven is open every week day of the year, and the Clerk of Shell-fisheries is there during business hours to attend to the duties of the office, and answer such questions as may be addressed to him by any one desiring information. On every Monday, at 10 A. M., the Shell-fish Commissioners meet to perform the routine work of the week and hold consultations with such of the oyster-growers as may have matters to submit to them. There are in the office more or less complete maps of the oyster-ground designations within the exclusive jurisdiction of the State, for every town in the State. These have been made by Mr. James P. Bogart, who has been in the employ of the State from the first appointment of a shell-fish commission,

and is thoroughly conversant with their details. There are still many cases where adjoining owners are not agreed as to what should constitute the boundaries between them. Most of these are designations made many years since, when the surveyors did not seem to appreciate the necessity of accuracy, or had not instruments of sufficient precision. They admit of two or more constructions, and therefore the boundaries can only be fixed by mutual agreement or by arbitration. In either case the maps are of the utmost importance, and the advice of the engineer naturally has great weight. After an agreement is reached, the lines are placed upon the map, buoys are set at the corners of the designations, and the number and location of each buoy are entered in the records of the office, so that at any future time any competent engineer can replace one that is lost or stolen with absolute precision. Not only are records of designations kept in the office, but transfers of deeds of oyster-grounds are preserved in the same manner as the records of a town clerk's office. All persons desiring information regarding any matters pertaining to the business come to the office as the proper place to obtain it.

The oyster industry in Connecticut is a rapidly-growing one, and as those engaged in it acquire more and more experience, and the great area of good ground is more carefully cultivated, it cannot fail to become a more and more important factor in the progress and wealth of the State.

A list of oyster steamers used in Connecticut waters, corrected to date, will be found immediately following the financial statement.

In conclusion, your Commissioners would state that, in view of the fact that there was no business transacted by the last General Assembly, they have reproduced in this report a considerable portion of the matter contained in the last report, with such alterations as have been found necessary to bring it up to date.

WM. M. HUDSON,
GEO. C. WALDO,
CHAS. W. BEARDSLEY,
Shell-Fish Commissioners.

FINANCIAL STATEMENT

OF THE SHELL-FISH COMMISSIONERS FOR THE YEAR ENDING JUNE 30,
1891.

 RECEIPTS.

Total receipts, - - - - -	\$7,362.46
For deeds delivered, - - - - -	\$1,066.84
For deposit fee on applications, - - - - -	119.20
For drawing and recording deeds, - - - - -	126.85
Taxes collected, - - - - -	6,049.57
	<hr/>
	\$7,362.46

DISBURSEMENTS.

Total disbursements, - - - - -	\$4,103.95
Clerical expenses, - - - - -	\$1,400.00
Office expenses, - - - - -	550.40
Inspectors of mud dumping, - - - - -	67.50
Preservation of landmarks, - - - - -	118.00
Engineer's expenses, - - - - -	203.80
Commissioners' pay and expenses, - - - - -	1,764.25
	<hr/>
	\$4,103.95

SUMMARY.

Total receipts for the year, - - - - -	\$7,362.46
Total disbursements for the year, - - - - -	4,103.95
	<hr/>
Excess of receipts over disbursements, - - - - -	\$3,258.51

FINANCIAL STATEMENT

OF THE SHELL-FISH COMMISSIONERS FOR FIFTEEN MONTHS ENDING
SEPTEMBER 30, 1892.

 RECEIPTS.

Total receipts, - - - - -	\$10,330.10
For deeds delivered, - - - - -	\$756.70
For drawing and recording deeds, - - - - -	137.30
For taxes collected, - - - - -	9,427.10
For deposit fee, - - - - -	5.00
Rent of sextants, - - - - -	4.00
Amount sent to State Treasurer, - - - - -	<u>\$10,330.10</u>

DISBURSEMENTS.

Total disbursements for the fifteen months ending September 30, 1892, - - - - -	\$1,983.60
For pay and expenses of engineer, - - - - -	\$228.00
For office rent and supplies, - - - - -	540.20
For inspectors of mud dumping, - - - - -	612.50
For preservation of landmarks, - - - - -	102 90
*For pay and expenses of Commissioners, - - - - -	500.00
	<u>\$1,983.60</u>

SUMMARY.

Total receipts for fifteen months, - - - - -	\$10,330.10
Total disbursements for fifteen months, - - - - -	1,983.60
Excess of receipts over disbursements, - - - - -	<u>\$8,346.50</u>

*The Comptroller has refused to pay any salary to the Clerk, and has declined to recognize two of the Commissioners.

NAME.	TONNAGE.		CAPACITY.	OWNER.	LOCALITY.
	Gross.	Net.			
H. S. Lockwood,	69.50	34.75	1,000	E. F. Lockwood,	Greenwich.
Ithiel,	31.93	15.97	800	Chas. E. Palmer,	Greenwich.
Susie,			100	W. A. Cumming,	Stamford.
Ripple,	36.30	18.10	900	D. B. Decker, .	Norwalk.
Adeline,	20.07	7.33	300	S. H. Lowndes,	Norwalk.
J. Howard Lowndes,	72.07	36.84	1,500	S. H. Lowndes,	Norwalk.
Waneta,	19.89	9.95	500	Gould Hoyt, .	Norwalk.
Cereus,	16.57	8.29	400	C. W. Raymond,	Norwalk.
Addie V.,	21.27	11.88	500	William Verity,	Norwalk.
Laurel,			400	A. Solmons, .	Norwalk.
Edith A.,	30.00	15.50	400	Joseph & Chas. Vroom,	Norwalk.
Freddie W. Decker,	20.00	14.36	800	Peter Decker, .	Norwalk.
Island Bell, . . .	50.98	25.49	1,000	J. H. Lowndes,	Norwalk.
Wm. H. Hoyt,	91.02	45.51	2,000	Wm. H. Hoyt & Son,	Norwalk.
Jessie Clayton, .	56.23	28.17	1,200	Chas. Lowndes,	Norwalk.
C. B. Lowndes, .	28.43	14.22	1,400	W. C. Hulse & H. W. Wells,	Norwalk.
Henry J.,	42.42	26.96	1,200	T. S. Lowndes,	Norwalk.
Flora,	20.49	10.25	500	A. D. Corson, .	Norwalk.
Mabel Stevens,	31.74	21.12	1,200	W. I. Stevens, .	Norwalk.
Kate C. Stevens,	104.65	52.33	2,500	W. I. Stevens, .	Norwalk.
Medea,	54.02	27.01	1,000	H. Rowland, .	Norwalk.
Etta May,	99.55	49.78	1,300	Dr. Jacob May,	Norwalk.
Josephine, . . .	85.89	42.95	2,000	Craw & L'Hommedieu,	Norwalk.
F. C. & A. E. Rowland,	55.78	26.82	1,000	D. K. Cole, .	Norwalk.
Molly,	29.36	19.44	200	C. W. Bell,	Norwalk.
Alberta,	23.78	13.28	500	B. Frank & Chas. F. Howell,	Norwalk.
Ostrea,	97.99	70.60	1,500	M. E. Morris, .	Bridgeport.
Golden Gale, . .	18.08	9.04	300	M. E. Morris, .	Bridgeport.
Bond & Currier, .	94.86	66.63	1,400	A. A. Bond, .	Bridgeport.
Annie,	71.83	48.50	800	Pierre F. West,	Bridgeport.
Active,	59.74	40.09	900	Pierre F. West,	Bridgeport.
Florence,	84.86	64.60	1,200	Henry J. Lewis,	Bridgeport.
C. S. Conklin,	52.96	34.15	950	Henry J. Lewis,	Bridgeport.
Virginia,	83.10	46.50	1,000	Henry J. Lewis,	Bridgeport.

LIST OF OYSTER STEAMERS USED IN CONNECTICUT WATERS, 1892. — *Continued.*

NAME.	TONNAGE.		CAPACITY.	OWNER.	LOCALITY.
	Gross.	Net.			
C. W. Hoyt,	69.66	34.83	1,000	C. W. Hoyt & Son,	Bridgeport.
W. M. Merwin,	64.21	35.14	1,000	W. M. Merwin & Sons,	Milford.
W. A. Cumming,	76.17	40.84	1,100	W. M. Merwin & Sons,	Milford.
Spark,	22.15	10.08	200	C. D. Parmelee,	New Haven.
Pioneer,	44.37	24.19	400	Ludington & Palmer,	New Haven.
Luzerne Ludington,	74.27	37.14	1,000	Ludington & Palmer,	New Haven.
W. H. Lockwood,	48.94	29.71	1,000	H. C. Rowe & Co.,	New Haven.
Gordon Rowe,	57.99	29.00	1,000	H. C. Rowe & Co.,	New Haven.
Ruel Rowe,	147.85	73.93	2,400	H. C. Rowe & Co.,	New Haven.
Mikado,	76.92	51.33	900	J. Smith & Son's,	New Haven.
Daisy E. Smith,	61.68	30.84	1,200	J. Smith & Son's,	New Haven.
Jeremiah Smith,	113.38	66.28	2,300	J. Smith & Son's,	New Haven.
Enterprise,	34.00	20.65	800	Hulse & Dunbar and Lancraft Bros.,	New Haven.
Isaac E. Brown,	85.68	56.17	1,400	I. E. Brown,	New Haven.
Ivornia,	13.36	6.68	900	J. E. Bishop & Co.,	New Haven.
James Morgan,	35.99	27.80	900	American Oyster Co.,	New Haven.
Emily Mansfield,	66.28	47.82	1,200	F. Mansfield & Son's,	New Haven.
J. & G. H. Smith,	42.53	21.26	800	G. H. Smith,	New Haven.
J. & P. Thomas,	79.02	48.48	1,500	Thomas Thomas,	New Haven.
Smith Brothers,	64.74	48.74	1,600	Smith Brothers,	New Haven.
Amanda,	74.53	37.27	1,300	Lancraft Brothers,	New Haven.
Richard W. Law,	113.62	56.81	2,000	Richard W. Law,	New Haven.
H. A. Barnes,	64.82	43.34	1,500	Barnes & Lane,	New Haven.
Jennie,			300	G. M. Long & Co.,	New London.
Kittie,			350	T. H. Buffham,	New York.
Falcon,			700	J. & J. W. Ellsworth,	New York.
Lizzie E. Woodward,			1,000	Van Name Bros.,	New York.
J. W. Boyle,			1,000	J. W. Boyle,	New York.
J. P. Mesereau,			1,500	Daniel Burbank,	New York.
Lizzie H.,			1,600	Jacob I. Housman,	New York.
Mystery,			2,000	G. H. Shaffer & Co.,	New York.
Harry,			2,500	Peter Androvette,	New York.
Daisy,			400	Mott & Shaffer,	New York.

ALPHABETICAL LIST OF OWNERS OF OYSTER GROUND

WITHIN THE JURISDICTION OF THE STATE, WITH THE NUMBER OF ACRES OWNED BY EACH, AS SHOWN BY THE BOOKS OF THE SHELL-FISH COMMISSION ON NOVEMBER 1, 1891, THE DATE OF THE LAST COMPLETED TAX LIST.

Name.	Town.	Acres.
H. M. Alling,	New Haven,	210.
Franceline Arsant,	Greenwich,	10.
R. G. Averill,	Branford,	50.
Carl Anderson,	Norwalk,	13.8
American Oyster Co.,	New Haven,	451.1
Avery, Van Name & King,	New Haven,	150.
A. T. Averill,	Branford,	50.
H. K. Atwood,	Boston, Mass.,	299.4
Atwood & Higgins,	Boston, Mass.,	200.
C. H. Armstrong,	Bridgeport,	52.9
D. N. Armstrong,	Bridgeport,	48.2
Harley C. Backus,	New Haven,	200.
Ernest E. Ball,	New Haven,	350.
H. W. Barmore,	Greenwich,	17.
Mark Banks,	Greenwich,	2.
A. B. Barnes,	New Haven,	25.
Barnes & Lane,	New Haven,	450.3
W. S. Barnes,	New Haven,	101.2
Paul D. Beach,	Branford,	50.
A. J. Beardsley & Son,	Bridgeport,	280.
Beardsley & Higbee,	Milford,	800.
F. J. Beardsley,	Stratford,	93.5
F. S. Beardsley,	Stratford,	317.
Hon. A. B. Beers,	Bridgeport,	174.3
Belden A. Hall,	Branford,	105.3
Charles W. Bell,	Norwalk,	435.
Bell & White,	Norwalk,	120.
Benedict & Beardsley,	New Haven,	102.6
Thomas E. Benedict,	New Haven,	290.
Benton & Averill,	Branford,	200.
Henry Bills,	New Haven,	17.4
J. E. Bishop (estate),	New Haven,	220.
Samuel Boerum (estate),	Norwalk,	10.
John Bogart,	New Haven,	44.6
J. J. Bohnner,	Brooklyn, N. Y.,	40.
A. A. Bond,	Bridgeport,	293.6
Bond & Currier,	Bridgeport,	206.6
I. L. & J. L. Bradley,	New Haven,	12.
Bradley & Platt,	Orange,	47.5
John G. Bramley,	Jordan, N. Y.,	212.
Bray, Rose & Ives,	New Haven,	131.5
Bray, Rose & Marks,	New Haven,	81.6
	Carried forward,	6,965.4

Name.	Town.	Acres.
	Brought forward,	6,965.4
T. D. & B. S. Brooks,	Danbury,	50.
William T. Brooks,	Norwalk,	35.
Brown & Lewis,	New Haven,	40.
Isaac E. Brown,	New Haven,	514.8
J. C. Brundage,	Greenwich,	8.
William Bryan,	Branford,	100.
Daniel Burbank,	Staten Island, N. Y.,	44.
D. C. Burwell,	New Haven,	32.
John M. Button,	New Haven,	100.
Silas B. Byxbee,	Norwalk,	34.
Crampton, Brooks & Fowler,	Guilford,	162.5
John Cadmus,	Wood Haven, N. Y.,	46.3
H. L. Case,	Norwalk,	36.
Elmer E. Case,	Norwalk,	80.
Samuel Chard,	Greenwich,	171.2
David B. Chard,	Greenwich,	28.4
J. M. Chappell & Co.,	New Haven,	51.6
W. H. Case,	Norwalk,	10.
D. K. Cole,	Northport, N. Y.,	85.
Theodore Clark,	Greenwich,	42.
James Clark,	New Haven,	54.4
S. & D. Chipman,	New Haven,	150.
John Collinge (estate),	Greenwich,	119.3
H. W. Cole,	Norwalk,	6.
William A. Cumming,	Stamford,	249.9
William A. & Thomas Cumming,	Stamford,	493.5
Thomas Cumming,	Stamford,	20.7
Julia L. Crockett,	Norwalk,	12.1
Alfred S. Crockett,	Norwalk,	2.
Craw & L'Hommedieu,	Norwalk,	1,810.3
A. D. Corson,	Norwalk,	537.
Oliver Cook,	Norwalk,	468.
Cook & Hilton,	Norwalk,	60.
John Daley,	Unknown,	85.7
John Dayton,	Greenwich,	2.
George W. Dayton,	New Haven,	101.8
J. H. & George H. Dayton,	Greenwich,	438.1
Charles W. Davis,	Portchester, N. Y.,	7.7
Abram Decker,	Norwalk,	133.3
David B. Decker,	Norwalk,	135.4
Garrett F. Decker,	Norwalk,	118.9
John Decker,	Stamford,	10.
Josephine J. Decker,	Norwalk,	44.4
Peter Decker,	Norwalk,	320.
Sylvester P. Decker,	Norwalk,	146.
Hon. R. E. DeForest,	Bridgeport,	71.4
John L. Delano,	Portchester, N. Y.,	3.
Thomas H. Delano,	New York City,	24.
John H. DeWaters,	Norwalk,	148.6
DeWaters & Stevens,	Norwalk,	135.
Alphonso Dibble,	Norwalk,	115.8
R. B. Dibble,	Norwalk,	35.
Stephen E. Dibble,	Norwalk,	10.
B. L. Dorman,	Greenwich,	6.
Elizabeth S. Dunn,	New York City,	31.
Charles N. Eaton,	New Haven,	125.1
	Carried forward,	14,867.6

Name.	Town.	Acres.
	Brought forward,	14,867.6
Jeannetta Elley,	New Haven,	89.
J. & J. W. Elsworth,	New York City,	348.8
George Farwell,	Portchester, N. Y.,	4.
James Farwell,	Portchester, N. Y.,	19.1
John Farwell,	Portchester, N. Y.,	30.
George W. Ferris,	Greenwich,	10.
Louis Finiels,	Greenwich,	72.3
Henry R. Fitch,	Norwalk,	28.
Ford & Swan,	Bridgeport,	103.3
Adolphus L. Ford,	Greenwich,	25.
A. Lincoln Ford,	Greenwich,	28.
Claudia M. Ford,	Greenwich,	10.
Elbert L. Ford,	Milford,	164.
E. E. B. Ford,	Greenwich,	14.
H. Fordham & Son,	Greenport,	100.
Fordham & Bell,	Southington,	100.
Henry C. Fordham,	Stratford,	50.
John W. Fowler,	Milford,	430.
Reuben L. Fowler,	Guilford,	400.
Delos L. Franklin,	New York City,	500.
Z. E. Franklin (estate),	Milford,	100.
French & Brophy,	Bridgeport,	50.
Nathan C. Frink,	Branford,	394.6
Nelson Frisbie,	New Haven,	100.
Hans Gager,	Norwalk,	10.
George F. Galot,	Fairfield,	103.3
Mary O. Garry,	Stratford,	47.
Albert A. Geib,	Norwalk,	344.
Annie W. Van Glahn,	New Haven,	34.3
E. W. Godfrey,	Norwalk,	109.4
William Godfrey,	Norwalk,	46.
Guilford Oyster Co.,	Guilford,	822.3
George C. Hamilton,	New Haven,	238.
Hanscomb & Alling,	New Haven,	103.3
Edward J. Hassan,	East Haven,	13.5
Wheeler Hawley,	Bridgeport,	145.7
Andrew Heath,	Norwalk,	45.
H. R. Hilton,	Norwalk,	40.
Hollins & Ott,	Norwalk,	26.6
Newman Holly,	Portchester, N. Y.,	43.
Clinton F. Hopkins,	Greenwich,	4.
Gilbert Hopkins,	Greenwich,	14.
Judson W. Hopkins,	Greenwich,	5.
George T. Horn,	Fairfield,	67.7
S. C. Horton,	Norwalk,	10.
William T. Hotchkiss,	New York City,	83.3
B. Frank Howell,	Norwalk,	51.6
C. B. Hoyt & Co.,	Bridgeport,	50.
Charles W. Hoyt,	Bridgeport,	536.8
Gould Hoyt,	Norwalk,	24.
William F. Hoyt,	Norwalk,	29.7
William H. Hoyt & Son,	Norwalk,	787.6
G. F. Husted,	Greenwich,	50.
J. E. Husted,	Greenwich,	5.
P. B. Husted,	Camden, N. J.,	10.
Anthony Hughes,	New Haven,	422.
	Carried forward,	22,359.8

Name.	Town.	Acres.
	Brought forward,	22,359.8
Charles P. Hull (estate),	Norwich,	105.8
Hulse & Dunbar,	New Haven,	124.9
Hulse & Stubbs,	Norwalk,	98.3
Perry C. Huntley,	Bridgeport,	8.
Charles A. Hurd,	Bridgeport,	86.
Charles H. Hyde,	Norwich,	19.5
Ives & Andrews,	New Haven,	11.
H. St. Clair Johnson,	New Haven,	107.
John Jones,	New Haven,	25.
Judson & Whiting,	Stratford,	94.1
Edwin R. Kelsey,	Branford,	200.
Charles H. Knapp,	Greenwich,	24.
William E. Lafoe,	New Haven,	22.4
W. W. & R. L. Laforge,	Staten Island, N. Y.,	138.
Lancraft Brothers,	New Haven,	1,538.6
Lane & Linsley,	New Haven,	60.
Fred A. Lane,	New Haven,	30.
Frank T. Lane,	New Haven,	72.
F. T. & F. A. Lane,	New Haven,	108.
J. H. & S. B. Law,	New Haven,	262.
R. W. Law,	New Haven,	188.
R. W. Law, Jr.,	New Haven,	428.
Henry J. Lewis,	Stratford,	6,899.
W. W. Liverman,	Darien,	21.6
John S. L'Hommedieu,	Norwalk,	10.
Lockwood & Hopkins,	Greenwich,	165.
E. F. Lockwood,	Greenwich,	993.7
John Henry Lockwood,	Norwalk,	13.5
S. B. Lockwood,	Greenwich,	8.9
Theron W. Lockwood,	Norwalk,	13.6
Charles Lowndes,	Norwalk,	392.4
Charles T. Lowndes,	Norwalk,	90.
Stanley H. Lowndes,	Norwalk,	305.6
Theodore S. Lowndes,	Norwalk,	381.2
William R. Lowndes,	Norwalk,	6.
Ludington & Eaton,	New Haven,	50.
Ludington & Palmer,	New Haven,	536.3
N. A. Ludington,	New Haven,	143.4
Alexander Lutz,	New York City,	16.
George W. Mallory,	New Haven,	150.
C. S. Maltby (estate),	Greenwich,	20.9
F. Mansfield & Son,	New Haven,	790.9
Lodema Marks,	North Haven,	100.
Benjamin Marshall,	Stamford,	15.
E. Y. Marshall & Sons,	Stamford,	23.5
Marshall, Wilmot & Starkins,	Greenwich,	95.2
George W. Martin & Son,	Portchester, N. Y.,	80.
Henry J. Martin,	Portchester, N. Y.,	6.3
Jacob May,	Bridgeport,	293.2
Jacob May & Co.,	Bridgeport,	512.3
John McGinnis,	Stamford,	30.4
William McGuire (estate),	Portchester, N. Y.,	12.
McNeil & Carrington,	New Haven,	171.1
Daniel McNeil,	Apalachicola, Florida,	40.
Daniel S. Mead, Jr. (estate),	Greenwich,	123.5
Warren C. Mead,	Portchester, N. Y.,	4.1
	Carried forward,	38,625.

Name.	Town.	Acres.
	Brought forward,	38,625.
Peter A. Meeks,	New Haven,	50.
Francis E. Merwin,	Norwalk,	4.5
S. O. Merwin,	New Haven,	59.6
William M. Merwin,	Milford,	361.
William M. Merwin & Sons,	Milford,	1,611.
Anderania Miller,	New Haven,	117.
Miller & Day,	Stratford,	299.8
E. Millspaugh,	Norwalk,	10.
William G. Moe,	Norwalk,	30.3
Daniel Marony (estate),	Fairfield,	51.6
J. H. Munsell,	Norwalk,	5.
William Moore,	Norwalk,	51.
Julius Morris,	New Haven,	2.1
William Morrell,	Greenwich,	32.
M. E. Morris,	Bridgeport,	985.3
Morris & Hooper,	Bridgeport,	103.3
Lincoln Moss,	New York City, .	57.7
James B. Munson,	New Haven,	77.
Charles J. Nash,	Bridgeport,	36.8
Charles Newman,	Greenwich,	10.
Oscar Newman,	Greenwich,	10.1
John Page,	New Haven,	66.
B. F. Palmer,	Greenwich,	77.5
Charles E. Palmer,	Greenwich,	429.9
C. F. & C. E. Palmer,	Greenwich,	70.
George A. Palmer,	Greenwich,	48.2
H. Ferris Palmer,	Greenwich,	18.
M. K. & A. J. Palmer,	Greenwich,	20.
Joseph G. Palmer,	Greenwich,	58.4
Ralph A. Palmer,	Meriden,	130.
Daniel C. Parmelee,	New Haven,	280.
R. H. Parmelee,	Norwalk,	16.
Albert Pausch,	Hartford,	75.9
D. L. Peck (estate),	Clinton,	50.
Henry Peters,	Portchester, N. Y.,	10.
Edward T. Pettigrew,	Groton,	103.3
Charles L. Pfuderer,	New Haven,	10.5
John H. Plander,	Norwalk,	2.
G. H. & J. E. Post,	Keyport, N. J.,	121.8
Isaac S. Potter,	New Haven,	36.
A. M. Prior,	Stamford,	315.8
Charles W. Raymond,	Darien,	129.9
George W. Raymond,	Norwalk,	10.
William A. Raymond,	Norwalk,	15.4
William H. Raymond,	Norwalk,	3.1
W. S. Reynolds,	Norwalk,	7.9
Nathan Roberts,	Norwalk,	12.
William O. Roberts,	Norwalk,	12.
Rose & Ames,	New Haven,	25.
B. N. & E. C. Rowe,	New Haven,	50.
Henry C. Rowe,	New Haven,	7,942.2
William M. Rowland & Co.,	New Haven,	516.
C. H. Russell,	Bridgeport,	50.
P. G. Sanford,	Westport,	387.2
L. W. Sarles,	New Haven,	24.
William H. Sears,	New Haven,	200.8
	Carried forward,	53,914.9

Name.	Town.	Acres.
	Brought forward,	53,914.9
See & Hart,	Fairfield,	74.6
C. Barnum Seeley,	Bridgeport,	10.
Sands Selleck,	Norwalk,	152.1
Selleck & Shaffer,	Norwalk,	101.2
Selleck & Webb,	Norwalk,	12.7
George H. Shaffer,	New York City,	116.
Shaffer & Mott,	New York City,	118.8
F. W. Shepard,	Branford,	50.
Francis X. Simile,	Greenwich,	34.
Smith Brothers, Rowaton,	Norwalk,	100.
Smith & Benedict,	New Haven,	5.
Smith & Lane,	New Haven,	146.
Charles A. Smith,	Bridgeport,	50.
Daniel M. Smith,	New Haven,	100.
George H. Smith,	New Haven,	398.1
J. Smith & Sons,	New Haven,	1,878.8
Julia Smith,	New Haven,	38.
S. F. & W. M. Smith,	New Haven,	175.
M. P. & R. T. Smith,	New Haven,	200.
Smith Brothers,	New Haven,	665.
Alden Solomon,	Norwalk,	634.9
Stannard & Moore,	Westbrook,	117.
Samuel Starkins,	Greenwich,	107.
Aaron G. Stevens,	Norwalk,	81.3
George W. Stevens,	Norwalk,	18.
G. W. & A. G. Stevens,	Norwalk,	4.
William I. Stevens,	Norwalk,	2,051.9
Stony Creek Oyster Co.,	Branford,	33.
Stratford Oyster Co.,	Stratford,	943.
H. B. Taylor,	Norwalk,	48.5
John Thomas,	New Haven,	12.5
Thomas Thomas,	New Haven,	277.5
John & Thomas Thomas,	New Haven,	362.3
Charles F. Thomas,	Norwalk,	96.
C. E. Thompson,	New Haven,	108.
E. J. & J. E. Thompson,	New Haven,	80.
C. A. Tomlinson,	Milford,	200.
Charles H. Townsend,	New Haven,	206.6
Townsend, Brown & Rowe,	New Haven,	98.
George H. Townsend,	New Haven,	999.6
Herman I. Travis,	Portchester, N. Y.,	8.
Isaac M. Travis,	Portchester, N. Y.,	31.
Emma L. Turpin,	Bridgeport,	294.1
F. H. Turpin,	Bridgeport,	100.
Alvah B. Tuthill,	Norwalk,	530.6
Aaron Van Name,	Norwalk,	51.6
W. M. Vars,	Norwich,	38.2
Joseph Vroom,	Norwalk,	69.6
Peter H. Walsh,	Greenwich,	25.
W. W. Ward,	Orange,	750.
Warren & Decker,	Norwalk,	80.
C. R. Waterhouse, Jr.,	New Haven,	100.
C. H. Waterman,	New York City,	146.6
J. A. Weaver,	New York City,	200.4
C. H. & J. H. Webb,	Darien,	34.3
Henry W. Webb,	Norwalk,	1.
	Carried forward,	67,279.7

Name.	Town.	Acres.
	Brought forward,	67,279.7
Wedmore, Turcott & Garland, . . .	New Haven,	138.6
H. W. Wells,	Norwalk,	10.
Pierre F. West,	Bridgeport,	219.3
Westcott & Horton,	Greenwich,	15.
William Whaley,	Greenwich,	15.5
Frank Wheeler,	Meriden,	400.
Harriet L. White,	Norwalk,	24.
Merrill White,	New Haven,	135.9
Elizabeth Wicks,	Norwalk,	58.
George A. Wicks,	Norwalk,	27.9
J. A. Wicks,	New Haven,	50.
Floyd E. Wiggins,	New Haven,	98.8
George Williamson,	Darien,	6.
Wilmot Brothers,	Darien,	28.9
John S. Woglan,	Stratford,	75.9
Thomas Wright,	Norwalk,	103.3
	Total,	68,686.8

APPENDIX.

SUPREME COURT'S OPINION.

THE REASONS GIVEN FOR THE DECISIONS IN THE OYSTER CASE.

Following is the decision in the case of the State against Charles J. Nash, in which the Supreme Court found no error. The opinion was written by Judge Fenn, and handed down May 28, 1892:

The defendant having been convicted in the criminal Court of Common Pleas for Fairfield county of a violation of General Statutes, Section 2358, namely, of taking oysters from a place in Bridgeport in said county, designated for their cultivation, appealed to this court. The taking was admitted; also the designation on October 20, 1890, of the territory named by the Board of Shell-fish Commissioners of this State, pursuant to General Statutes, Section 2217; but the defendant claimed such ground was a natural clam and oyster bed, and therefore not duly designated within the meaning of the law, and that the grant of the franchise, and a subsequent assignment thereof, were, for that reason, void. And the broad question presented by the various reasons of appeal in this case, confessedly brought to this court, as a test one, in the interest of a class known as "Natural Growth Oystermen," who earn their livelihood by procuring oysters from the public natural beds of the State, is, whether it is competent to defend against a charge of this character, by evidence that the territory from which the oysters were taken, not included in the locations and descriptions embraced in General Statutes, Section 2328, is in fact, and notwithstanding its designation and grant subsequent to the enactment of that statute, a natural oyster bed, under State jurisdiction.

Accordingly as said question shall be answered by this court, in the affirmative or negative, the judgment of the court below must be vacated or sustained, and we will therefore consider it solely, without separate reference to the various rulings and reasons of appeal.

Counsel for the defendant say in their brief that it has been the policy of the State to encourage the planting and cultivation of the large area of territory in Long Island Sound, by private enterprise, by every legitimate and reasonable method of protection; but that the Legislature has shown an equal solicitude to preserve the natural beds of the State for the public use; that "it cannot be claimed that it is not wise and beneficial to protect the industry of oyster planting, which in

the past ten years has become second to none in this State, but that industry is not to be advanced to the prejudice of those persons who are not so fortunate as to control capital, and who rely upon the natural beds to furnish them occupation and support." In this we fully concur, and these balanced considerations, if kept in mind, will aid materially in arriving at the intention of the Legislature in these enactments which defendant's counsel declare to be "a compilation of divergent views and inconsistent provisions resulting from the eternal conflict between the two classes of oystermen."

This court held in *Averill vs. Hull*, 37 Conn., that the defendant, in a proceeding brought for the confiscation of a vessel used in taking oysters from ground designated by a town committee, might show that such place was in fact a natural oyster bed, and that such designation would be invalidated by such proof. It is claimed that the reasoning and authority of that decision applies, and demonstrates that the evidence rejected, in this case, was admissible. And unless the cases are distinguishable by virtue of subsequent legislation, it may be freely conceded that this contention of the defendant is correct. As the law stood when *Averill vs. Hull* was decided, and prior to 1881, since the State had made no effort to designate and point out its natural oyster beds, nor had empowered the town committees to designate those in town jurisdiction, this was of necessity a proper defense in each case, since otherwise, as the court (Seymour, J.) said, in that case, if such evidence "was not admissible, the natural oyster beds of the State are subjected to the control of a committee of the town, without a hearing and without appeal." But it is manifest, that, although necessity made such defense relevant, the right in every case to collaterally attack, by parol evidence, in trials to the jury, the title of those to whom designations were made, must have been disquieting in the extreme to persons desiring to embark in the business of oyster culture. And it was, as we believe, largely for that reason that the Legislature by an act passed in 1881 (amended in 1882), now General Statute, Section 2315, enacted that the State should exercise exclusive jurisdiction and control over all shell-fisheries located in a certain designated area of the State, and further provided in what is now General Statutes, Section 2316, that a survey and map should be made of all the grounds within said area, which had been or might be designated for the planting or cultivation of shell-fish, and also a survey of all the natural oyster beds in said area, which should be located and delineated on said map. The object of such survey seems manifest, and it having been accomplished, the Legislature in 1885, by public acts (Acts 1885, Chapter 118), expressly provided that the locations and descriptions of the natural oyster beds, respectively under State jurisdiction are as follows, to wit: "Enumerating them with the utmost particularity and precision." And the Legislature, in 1887, re-enacted such act by approving it as Section

2328 of the General Statutes, to take effect January 1, 1888. Thus declaring not alone what the locations and descriptions of such beds were in 1885, but that they remained unaltered in 1888, and were intended, as they must have been unless we impute folly to the Legislature, as authoritative, permanent, and exclusive designations of such grounds under State jurisdiction, subject only to such alteration, if any, as the Legislature might from time to time prescribe, or as might be made in accordance with existent statutory provisions. And the effect of these enactments is, that in a proceeding like the present, and in a case where the grant of the franchise to private parties has been made since such enactment, while the fact that such ground is a natural oyster bed would render the grant invalid, the only proof of such fact which is admissible by way of collateral attack, is not by parol evidence but by showing that such ground is embraced in the locations and descriptions contained in the statute, of the natural oyster beds under State jurisdiction.

Any seeming difficulties in the way of our present conclusion resulting from the provisions of certain of the sections of the act of 1881, which are continued in the present revision of the statutes, will disappear if we remember, as we should, that such provisions having been enacted prior to the authoritative determination by the Legislature in the act of 1885, are now, and so far forth as they continue existent provisions, to be construed in the light of the changed condition which that statute (General Statutes, Section 2328) has inaugurated.

It was somewhat lightly suggested that these grounds, if not natural oyster beds, in 1885, might have been such prior to that time, and within ten years previous to their designation in 1890. The answer to this suggestion may be found in the language of this court in *White vs. Petty*, 57 Conn., 579, 580.

There is no error in the judgment appealed from.

In this opinion the other judges concurred.

CORMELL REEF NATURAL BED.

The southern point of this bed is the point which is two thousand five hundred and fifty-five feet due north of a point which is one thousand nine hundred and twenty-two feet due west of the center of the tower of Great Captains Island light-house. The said southern point is also determined by the following sextant angles: Little Captains Island coast survey signal to Americus, $64^{\circ} 27'$; Americus to Mead, $84^{\circ} 16'$; Americus to Portchester spire (Methodist), $82^{\circ} 56'$. From the said southern point the eastern boundary line runs north twenty-eight degrees east, true meridian, seven hundred feet, to buoy known as 1002 in commissioners' buoy records, and determined by the following sextant angles: Little Captains Island coast survey signal to Americus,

70° 47'; Americus to Mead, 90° 03'; Mead to Great Captains Island light-house, 139° 15'. The following ranges pertain to this point: first, Daniel Lyon, Jr.'s, house on with High-water rock; second, sharp top tree in woods showing above all the woods, on with dock at the Americus club-house. Thence north thirteen degrees east, true meridian, one hundred and ninety feet to buoy known as 1003 in commissioners' buoy records, and determined by the following sextant angles: Little Captains Island coast survey signal to Americus, 72° 27'; Americus to Mead, 92° 00'; Mead to Great Captains Island light-house, 135° 27'. The following ranges pertain to this point: first, Methodist spire on with west end of sand beach on Calves Island; second, Rye Beach hotel on with gap or cut in Jones' stones. Thence north sixty-six degrees west, true meridian, four hundred and thirty-five feet to buoy known as 998 in commissioners' buoy records, and determined by the following sextant angles: Little Captains Island coast survey signal to Americus, 70° 25'; Americus to Mead, 95° 43'; Mead to Great Captains Island light-house, 139° 05'. The following ranges pertain to this point: first, gap in woods on with white rock on south end of Calves Island; second, clump of woods on Long Island on with west bluff of bank on Great Captains Island. Thence south fifty-one degrees and fifteen minutes west, true meridian, nine hundred and ten feet to a point determined by the following sextant angles: Little Captains Island coast survey signal to Americus, 62° 20'; Americus to Mead, 90° 14'; Americus to Portchester spire (Methodist), 88° 42'. Thence south five degrees and fifteen minutes west, true meridian, two hundred and fifteen feet to buoy known as 1023 in commissioners' buoy records, and determined by the following sextant angles: Great Captains Island light-house to Americus, 107° 42'; Americus to Calf, 110° 27'; Summer-house to Great Captains Island light-house, 107° 27'. The following ranges pertain to this point: first, barn just south of Bush's woods just open to the south of barn on Bower's Island; second, south edge of stone house on with white stone near the south end of Calves Island. Thence south seventy-five degrees and twenty minutes east, true meridian, seven hundred and seventy-five feet to the point of beginning. The area comprised is fifteen acres.

PORTCHESTER BED.

Beginning at the northern point of the bed, said point being the southeast corner of ground of Isaac Martin. The said point is known as buoy number 479 in commissioners' buoy records, and is determined by the following sextant angles: Summer-house to Calf, 131° 17'; Calf to Mead, 76° 54'; Summer-house to Great Captains Island light-house, 100° 40'; Great Captains Island light-house to Horse Neck spire, 84° 00'. The following ranges pertain to this point: first, the north side of Clifford's house opens about fifty feet west of the west side of

Black Tom rock: second, the south side of bathing-house of Edward Schell is in line with the north side of the high rock of the Black Tom rocks. (The bathing-house stands on the main shore southwest of the steamboat dock at Portchester.) From the said northern point the northern boundary line runs south sixty-five degrees and fifteen minutes west, true meridian, across the highest part of Beach rock to the shore. The point on Beach Rock is determined by the following sextant angles: Summer-house to Calf, $121^{\circ} 38'$; Calf to Horse Neck spire, $47^{\circ} 54'$; Summer-house to Great Captains Island light-house, $92^{\circ} 08'$. From the said northern point, the eastern boundary line runs south fifty-three degrees and thirty-five minutes east, true meridian, eight hundred and ninety feet, to buoy 481, at the south corner of the ground of George W. Martin. Thence south sixty-four degrees east, true meridian, one thousand eight hundred and fifty feet, to buoy 482. This point is determined by the following ranges: first, cupola of Abendroth's house over slim cedar tree, the west one of several, standing on the mainland and near the shore; second, the south side of woods on Rye Point, in line with bottom of bluff on south end of Manursing Island. Thence south sixty-six degrees and forty-five minutes east, true meridian, eight hundred and seventy-five feet to buoy 1076, the same being the south corner of ground of George Martin and Sons. Thence south four degrees west, true meridian, six hundred and eighty feet to buoy 514, at the north corner of ground of David B. Chard. This point is determined by the following ranges: first, bluff on Lloyd's Neck on with high-water mark at west end of Great Captains Island; second, liberty cap on large white boulder at the extreme west end of Brush Island over spindle on Jones' stones. Thence south thirty-one degrees and fifty minutes west, true meridian, along last mentioned range-line along ground of David B. Chard and on public domain, one thousand eight hundred and fifteen feet. Thence north sixty-seven degrees and fifteen minutes west, true meridian, one thousand four hundred and fifteen feet, in a line passing through buoys 489 and 490, and ranging: first, south side of a large tree on hill on with two cedar trees standing at the shore and nearly in line, and also in line with north end of steamboat dock. Thence north thirty-one degrees east, true meridian, three hundred and eighty-five feet along ground owned or occupied by William Maguire to buoy 510. Thence north fifty-nine degrees and twelve minutes west, true meridian, one thousand four hundred and eighty feet to Big Captains Island rock. This line ranges south chimney of Brook's house over cedar bush stuck on the Big Captains Island rock. The said rock is known in commissioners' buoy book records as position 486. Thence north fifty-five degrees west, true meridian, one thousand seven hundred and sixty feet to position 478, the same being a hole drilled near the center of the outer rock at Bryam Point. A cedar bush stands in the hole. Thence northerly along the east bank of Bryam Point to

intersect the northern boundary line of the bed. The area of this bed is two hundred and eighteen acres.

The following sextant angles are of record as determining the positions and points mentioned in the preceding description, namely:

481 — Summer-house to Great Captains Island light-house, $117^{\circ} 42'$; Great Captains Island light-house to Horse Neck spire, $84^{\circ} 30'$; Great Captains Island light-house to Mayo, $82^{\circ} 10'$.

482 — Great Captains Island light-house to Calf, $97^{\circ} 31'$; Calf to Summer-house, $117^{\circ} 26'$; Great Captains Island light-house to Mayo $89^{\circ} 07'$.

1076 — Great Captains Island light-house to Mayo, $91^{\circ} 46'$; Mayo to Summer-house, $113^{\circ} 44'$; Great Captains Island light-house to Calf, $116^{\circ} 07'$.

514 — Great Captains Island light-house to Calf, $102^{\circ} 47'$; Calf to Summer-house, $86^{\circ} 11'$; Great Captains Island light-house to Rock, $66^{\circ} 41'$; Rock to Mead, $54^{\circ} 21'$.

489 — Great Captains Island light-house to Calf, $69^{\circ} 29'$; Calf to Rye spire, $103^{\circ} 09'$.

490 — Great Captains Island light-house to Calf, $62^{\circ} 44'$; Calf to Summer-house, $97^{\circ} 33'$.

510 — Great Captains Island light-house to Calf, $62^{\circ} 43'$; Calf to Summer-house, $111^{\circ} 42'$; Great Captains Island light-house to Mead, $94^{\circ} 33'$; Mead to Summer-house, $79^{\circ} 49'$.

486 — Great Captains Island light-house to Mead, $88^{\circ} 50'$; Mead to Summer-house, $119^{\circ} 01'$.

478 — Summer-house to Great Captains Island light-house, $83^{\circ} 00'$; Great Captains Island light-house to Horse Neck spire, $70^{\circ} 30'$; Great Captains Island light-house to Mayo, $64^{\circ} 25'$.

GREAT CAPTAINS ISLAND NATURAL BED.

Beginning at the point of intersection of a line due east of the Great Captains Island light-house, with a line ranging northerly and southerly over the steeple of the Methodist church in Greenwich and the west end of the building standing near the end of the steamboat dock; thence running southerly along the last-mentioned line about one thousand four hundred feet to a point of its intersection with a line ranging over a gap in the high woods, which are north and east of Reuben B. Lockwood's house in Old Greenwich, or Sound Beach, and low-water mark southeast of the clump on Little Captains Island. This point, known as number 521 in commissioners' buoy book, is determined by the following sextant angles, namely: Stamford light-house to Horse Neck spire, $62^{\circ} 19'$; Horse Neck spire to Rye spire, $91^{\circ} 13'$; Stamford light house to Americus, $59^{\circ} 17'$; Americus to Bloomer, $59^{\circ} 24'$. Thence running westerly on a straight line to a point formed at the intersection of two lines, one ranging over the north side of the high part of the

Rye Beach hotel and the south side of the gap in the woods on a distant hill in Rye, and the other ranging over the spire of the Second Congregational church at Greenwich and a small elm tree on the west end of Great Captains Island. This point, known in commissioners' buoy book as number 421, is determined by the following sextant angles: Little Captains Island to Calf, $67^{\circ} 03'$; Calf to Summer-house, $42^{\circ} 39'$; Stamford light-house to Mayo, $61^{\circ} 27'$; Mayo to Rye spire, $84^{\circ} 06'$. The west side of the bed follows the last-mentioned range line to the high-water line on the south side of Great Captains Island; thence easterly following said high-water line, to a point which is due east from the center of the tower of the Great Captains Island light-house; and thence due east to the point of beginning. The area of this bed is one hundred and fifty-two acres.

FIELD POINT NATURAL BED.

Beginning at a point in the commissioners' line of jurisdiction, where it is intersected by a line ranging over the steeple of the Second Congregational church at Greenwich and the extreme east end of the "marble house," formerly used as a marble factory, which stands near the steamboat dock; running thence southerly along said range line to its point of intersection known in commissioners' buoy book as number 453, with a line ranging westerly over the church spire at Rye, N. Y., and the south gable of the westernmost house on Calf Island. Said point is determined by the following sextant angles: Americus to Mead, $99^{\circ} 20'$; Mead to Great Captains Island light-house, $82^{\circ} 30'$; Horse Neck spire to Portchester spire, $77^{\circ} 29'$; Portchester spire to Great Captains Island light-house, $93^{\circ} 30'$. Thence running easterly to a point known in commissioners' buoy book as number 455, formed at the intersection of two lines; one line ranging westerly over a large tree in Portchester and the center of the eastern house on Calf Island (a slim cedar tree is in the same range), and the other line ranging northerly over the steeple of the Second Congregational church at Greenwich and the west side of Black Rock, west of the Americus house. This point may be found by the following sextant angles: Americus to Mead, $90^{\circ} 15'$; Mead to Great Captains Island light-house, $75^{\circ} 27'$; Horse Neck spire to Portchester spire, $75^{\circ} 11'$; Portchester spire to Great Captains Island light-house, $86^{\circ} 00'$. Thence running southwesterly to a point, known in commissioners' buoy book as number 456, formed at the intersection of three lines; the first line ranging westerly over the northeast corner of the north house on Calf Island and the north cedar tree at the shore on the east side of Calf Island; the second line ranging also westerly over the south edge of the Brooks' house and the north side of the shed which stands northeast of the barns on Calf Island; and the third line ranging northerly over the steeple of the Second Congregational church at Greenwich and the flag-

pole on the west end of Caleb Holmes' storehouse. This point is determined by the following sextant angles: Americus to Mead, $98^{\circ} 54'$; Mead to Great Captains Island light-house, $93^{\circ} 55'$; Horse Neck spire to Portchester spire, $75^{\circ} 48' 30''$; Portchester spire to Great Captains Island light-house, $103^{\circ} 48'$. Thence running northwesterly to a point, known in commissioners' buoy book as number 457, formed at the intersection of two lines; one line ranging over Lloyd's Neck bluff on the east side of the east clump at Little Captains Island, at about half the height of the clump, and the other line ranging over the east end of the dining-room of the Americus house and the center of the white rock at the extreme south end of Field Point. This point is determined by the following sextant angles: Little Captain commissioners' signal to Americus, $87^{\circ} 27'$; Americus to Mead, $128^{\circ} 37'$; Americus to Portchester spire, $113^{\circ} 37'$; Portchester spire to Great Captains Island light-house, $118^{\circ} 46'$. Thence running northerly to the line of jurisdiction between the State and town in the direction of a point, known in commissioners' buoy book as number 458, formed at the intersection of two ranged lines, one running easterly over the high part of the bluff on the north side of Little Horseshoe in Cos Cob harbor and the point where the black and white rocks on the extreme southeast end of Field Point come together; and the other line running westerly over the north side of the old Benjamin Merritt house, just clear of the cedars and the southwest end of Otter Rocks. This point is a little north of said line of jurisdiction, and is determined by the following sextant angles: Stamford light-house to Great Captains Island light house, $87^{\circ} 04'$; Great Captains Island light-house to Bloomer, $107^{\circ} 06'$; Great Captains Island light-house to Portchester spire, $110^{\circ} 57'$. The northern side of this bed follows the line of jurisdiction between the State and town. The area of this bed is eighty-four acres.

GREENWICH POINT NATURAL BED.

Beginning at a point at the intersection of the line of jurisdiction between State and town with a line ranging Seth Quintard's house over Ami Ferris's old house; thence running southerly on said range line to its point of intersection with a line ranging westerly over a round-topped tree in Rye and the south side of Great Captains Island at low water; thence westerly along said last-mentioned range line to its point of intersection with a line ranging about northwesterly over the steeple of the Second Congregational church at Greenwich, opening west of Flat Neck woods; thence northwesterly along the last-mentioned range line to where it intersects the line of jurisdiction between the State and town; thence easterly along said line to the point of beginning. The eastern line of the bed is a line which passes through two points which are determined by the following sextant angles, namely: First point: Stamford light-house to Greenwich Point, $105^{\circ} 49' 20''$; Greenwich

Point to Great Captains Island light-house, $52^{\circ} 17'$; Stamford light-house to Horse Neck spire, $99^{\circ} 13'$; Horse Neck spire to Great Captains Island light-house, $58^{\circ} 57'$. Second point: Stamford light-house to Greenwich Point, $82^{\circ} 25'$; Greenwich Point to Great Captains Island light-house, $63^{\circ} 32'$; Stamford light-house to Horse Neck spire, $88^{\circ} 59'$; Horse Neck spire to Great Captains Island light-house, $57^{\circ} 04'$. The southern line of the bed is a line which passes through two points which are determined by the following sextant angles: First point: Stamford light-house to Horse Neck spire, $82^{\circ} 38' 30''$; Horse Neck spire to Great Captains Island light-house, $55^{\circ} 38'$. Second point: Stamford light-house to Horse Neck spire, $84^{\circ} 43'$; Horse Neck spire to Great Captains Island light-house, $61^{\circ} 05'$; Stamford light-house to Greenwich Point, $47^{\circ} 23'$; Greenwich Point to Great Captains Island light-house, $98^{\circ} 24'$. The point last given is the southwest corner of the bed. The area comprised is four hundred and three acres.

FAIRFIELD BAR AND FAIRFIELD NATURAL BEDS.

These two beds are contiguous, and the portions thereof within State jurisdiction are as follows: Beginning at the center of the tower of the Penfield Reef light-house, and starting from this point as the southeast corner of these beds, the southern boundary line runs south eighty-one degrees and twenty-four minutes west, true meridian, eleven thousand five hundred and fifteen feet to the extreme south point of the three large flat rocks at the southern end of Sunken Island. Said point is located by the following sextant angles: Penfield Reef light-house to Episcopal spire in Fairfield, $63^{\circ} 10'$; Episcopal spire in Fairfield to Jennings' house, $90^{\circ} 26'$; thence due west twelve thousand three hundred and twenty-three feet to a rock known as "the fishing rock." Said rock is situated southerly of Farms Point, and is determined by the following sextant angles: Scott's house to Jennings' house, $38^{\circ} 47'$; Jennings' house to Burnham's barn, $111^{\circ} 11'$; Scott's house to Farms Point, $74^{\circ} 53'$; thence from "the fishing rock" due north to the commissioners' line of jurisdiction; thence easterly along said line of jurisdiction to Pine Creek Point; thence, still following the said line of jurisdiction to Shoal Point; thence along the Fairfield bar to a point due north of the center of the tower of the Penfield Reef light-house; thence due south to the point of beginning. The area comprised is one thousand two hundred and thirty-seven acres.

BRIDGEPORT NATURAL BED.

The part in State jurisdiction is described as follows: The southeast corner of this bed is the point which is three hundred and sixteen feet due east of a point which is one thousand one hundred and thirty-two feet due south of the center of the tower of the Bridgeport light-

house. The said southeast corner is the northeast corner of ground of David N. Armstrong. From said southeast corner the southern boundary line runs due west along ground of said Armstrong, a distance of one thousand nine hundred and thirty feet, to a point which has the following ranges: first, Black Rock light-house over the center of the woods on Wakeman's Island; second, soldiers' monument over the center of the grain elevator; thence northerly along the last-mentioned range line and along ground of Charles H. Armstrong, a distance of six hundred feet; thence south sixty-four degrees and fifty-seven minutes west, true meridian, four thousand one hundred and twenty feet along ground of said Armstrong; thence due south six hundred and sixteen feet along ground of said Armstrong to the northwest corner of ground of Wheeler Hawley; thence south sixty-four degrees and fifty-seven minutes west, true meridian, one hundred and seventy feet along ground of Charles J. Nash. (The said bearing ranges Black Rock light-house over the center of the woods on Wakeman's Island.) Thence south nine degrees west, true meridian, five hundred and eighty feet along ground of said Nash; thence south thirty-four degrees and fifty-two minutes west, true meridian, one thousand three hundred and twenty feet along ground of said Nash; thence south eighty-one degrees and forty-five minutes west, true meridian, three thousand seven hundred and twenty feet in a direct line towards the Black Rock light-house to the east shore of Fayerweather's Island at the high-water line; thence northerly along said east shore about four hundred and fifty feet to the line of jurisdiction between the State and town; thence northeasterly along said line of jurisdiction nine thousand four hundred and twenty feet to the extreme south point of the sea wall at Seaside Park; thence southeasterly along said line of jurisdiction two thousand eight hundred and seventy-five feet; thence due south one thousand three hundred and fifty feet to the point of beginning. The area thus comprised is three hundred and thirty-four acres.

STRATFORD NATURAL BED.

Beginning at a point in the Commissioners' line of jurisdiction, distant about one thousand eight hundred and thirty feet northeasterly from the center of the tower of the new Stratford Point light-house, thence running due south to a point which is determined by the following sextant angles: "Fish" to Stratford Point light-house, $105^{\circ} 47'$; Stratford Point light-house to Middle Ground light-house, $114^{\circ} 26'$; Stratford Point light-house to Penfield Reef light-house, $45^{\circ} 11'$. ("Fish" is the factory chimney of the oil works at Welch's Point.) The point thus located is the southeast corner of the bed, and it may also be found by intersecting the following range lines: One range line running northerly along the edge of the roof on the easterly side of the light-house keeper's new house, near the Stratford Point light-house; the

other range line running northeasterly over the southeast side or face of the old hotel on Charles Island, and a tall, prominent tree at the left side of a little gap in the woods on the northern slope of a distant hill. This gap may be found by beginning at the fish works at Welch's Point and looking northerly along the crest of hills until you pass four prominent single trees, which rise above the top of the general wood line. The fourth tree stands near the right hand side of the gap. At the said southeast corner, the compass bearing to the tower of the Stratford Point light-house, is northwest by west, and the distance to the same is one thousand four hundred and sixty feet; thence from said southeast corner running in a southwesterly direction a distance of twelve thousand two hundred and fifty feet to a point which is determined by the following sextant angles: Penfield Reef light-house to Middle Ground light-house, $99^{\circ} 07' 30''$; Middle Ground light-house to Stratford Point light-house, $115^{\circ} 27'$; Stratford Point light-house to Bridgeport light-house, $97^{\circ} 07'$; Bridgeport light-house to Penfield Reef light-house, $48^{\circ} 18'$. The approximate compass bearing of this line is southwest by west three-eighths west. The terminal point of this line is the extreme south point of the bed, and is also further determined by the intersection of the following range lines: Northerly, over Ambler's house at Nicholls Farms, Trumbull, and the middle poplar of the five poplar trees near the shore at Point-no-point, on what is termed the Lordship farm. The compass bearing of this range line is north by east. Northwesterly, over cupola of P. T. Barnum's house at Bridgeport, and the center of the dwelling-house attached to the Bridgeport light-house. Northwesterly again, over the cupola of Dr. Warner's house at Seaside Park, Bridgeport, and the west tree of five single trees on a ridge in the distance. The compass bearing of this range is northwest one-half north. Thence running northwesterly on a line in the direction of the spire of the Congregational church at Fairfield, a distance of thirteen thousand eight hundred and thirty feet, to its point of intersection with a line ranging northerly over the factory chimney of the Read Carpet Company at Bridgeport and the Soldiers' Monument at Seaside Park. Thence northerly along said last-mentioned range line to ground designated to Robert E. DeForest; thence due east to southeast corner of said designation; thence due north to the commissioners' line of jurisdiction; thence easterly along said line to the point of beginning. The area comprised is three thousand and fifty-five acres.

ROTON POINT AND FISH ISLAND NATURAL BEDS.

The part in State jurisdiction is described as follows: The northeast corner is a point which is thirty-five feet due south of a copper bolt set at the extreme south end of Bell Island. Said bolt is a triangulation station and is known as "Bell Island." From said northeast corner the northern boundary line runs south eighty-one degrees and twelve min-

utes west along the commissioners' line of jurisdiction in the direction of the position known of record in the buoy records as 1954, a distance of five thousand eight hundred and sixty-five feet to the east line of ground of Oliver Cook. (Said east line starting from a position known of record in the buoy records as number 1882, *i. e.*, the extreme east edge of Moll's rock showing at low water, and running to position 1887, *i. e.*, the extreme east edge of Peat's rocks at low water.) Thence south twenty-three degrees and fifteen minutes west and passing through position 1887, one thousand five hundred and eighty-five feet to position 1892. (Said position 1892 being the northeast corner of rocks on Fish Island at low water.) Thence south twenty-seven degrees and forty-five minutes west seven hundred and twenty feet to buoy 1234 at the northeast corner of ground of William I. Stevens; thence south four degrees and forty-five minutes west five hundred and twenty feet, to buoy 1191 at the southeast corner of said Stevens' ground; thence north seventy-four degrees and sixteen minutes east three thousand five hundred and sixty feet, to position 1900; thence north seventy-eight degrees and seven minutes east two thousand nine hundred and fifty-five feet, to buoy 1175 at the southwest corner of Charles W. Bell; thence north twenty-seven degrees east six hundred and fifteen feet, to buoy 1176; thence south seventy-three degrees east three hundred and forty feet, to buoy 1466; thence north twenty-two degrees and thirty minutes east one thousand and twenty feet to the commissioners' line of jurisdiction, said bearing being in line with buoy 1873; thence north forty-three degrees and thirty minutes west along said line of jurisdiction seven hundred and sixty feet to the point of beginning. All bearings are true meridian. The area comprised is three hundred and seven acres.

The following sextant angles determine the positions and points mentioned in the preceding description, namely:

1954—Collender to Cedar Tree (Fish Island), $79^{\circ} 15'$; Cedar Tree (Fish Island) to Bell Island, $71^{\circ} 05'$; Cedar Tree (Fish Island) to Norwalk light-house, $55^{\circ} 49'$.

1882—Collender to Cedar Tree (Fish Island), $28^{\circ} 30'$; Cedar Tree (Fish Island) to Norwalk light-house, $105^{\circ} 40'$; Cedar Tree (Fish Island) to Norwalk Spindle, $92^{\circ} 44'$; Norwalk Spindle to Pike, $60^{\circ} 50'$.

1887—Bell Island to Centennial, $100^{\circ} 20'$; Centennial to Collender, $91^{\circ} 19'$; Norwalk Spindle to Pike, $63^{\circ} 58'$.

1892—Norwalk Spindle to Pike, $63^{\circ} 10'$; Pike to Centennial, $49^{\circ} 08'$; Norwalk light-house to Pike, $51^{\circ} 31'$.

1534—Norwalk light-house to Centennial, $86^{\circ} 24'$; Centennial to Collender, $110^{\circ} 48'$; Bell Island to Centennial, $65^{\circ} 23'$.

1191—Norwalk light-house to Colyer, $82^{\circ} 59'$; Colyer to Collender, $106^{\circ} 47'$; Norwalk Spindle to Bell Island, $32^{\circ} 29'$.

1900—Chimons to Pike, $72^{\circ} 19'$; Pike to Collender, $97^{\circ} 55'$; Tavern Island to Pike, $62^{\circ} 51'$.

1175 — Norwalk light-house to Bell Island, $82^{\circ} 41'$; Bell Island to Colyer, $91^{\circ} 49'$; Chimons to Bell Island, $48^{\circ} 23'$; Bell Island to Collender, $118^{\circ} 02'$.

1176 — Norwalk light house to Bell Island, $96^{\circ} 14'$; Bell Island to Colyer, $91^{\circ} 08'$; Chimons to Bell Island, $55^{\circ} 53'$; Bell Island to Collender, $114^{\circ} 07'$.

1466 — Chimons to Bell Island, $67^{\circ} 26'$; Bell Island to Centennial, $77^{\circ} 54'$; Norwalk light-house to Depot, $89^{\circ} 10'$.

1873 — Chimons to Depot, $53^{\circ} 41'$; Depot to Centennial, $103^{\circ} 07'$; Chimons to Bell Island, $110^{\circ} 43'$.

State of Connecticut.

SECOND BIENNIAL REPORT

OF THE

FISH COMMISSIONERS

TO

His Excellency the Governor,

FOR THE FISCAL TERM ENDING SEPTEMBER 30, 1892.

HARTFORD:

THE FOWLER & MILLER COMPANY, PRINTERS, 341 MAIN STREET.

1893.

REPORT.

To His Excellency MORGAN G. BULKELEY, *Governor* :

The Fish Commissioners herewith have the honor of submitting their second Biennial Report (or their twenty-fifth and twenty-sixth annual reports), for the two years ending September 30, 1892.

TROUT DISTRIBUTION.

During the year 1891 the Commissioners caused 335,000 trout fry to be distributed in the different streams in the State, and 478,000 trout fry in the year 1892.

The demand for fry is increasing very much owing to the interest that is being taken in all parts of our State in re-stocking the trout streams, and the results that are obtained are very satisfactory indeed. For this reason, the Commissioners decided to obtain a much larger supply for 1892 than they had in previous years ; also, the season of 1891 being extraordinarily dry, we found that many of the trout fry planted that year had been killed. Already many applications have been received for fry to be delivered next spring, and we are of the opinion that 500,000 fry can be profitably planted during the coming season, and we therefore recommend that the appropriation for trout be increased to at least \$1,500. The fry were purchased from Mr. R. E. Follett of Willimantic both years. He obtained the eggs, and carried on his operations in Windham Centre. He had good success in obtaining a good supply of young trout.

We decided last spring to distribute the trout fry earlier than had been the custom heretofore, and we had excellent luck in distributing them. We obtained some new cans, which were also used in distributing the shad fry, and the percentage of fry lost was very small indeed. The gentlemen in different parts of the State to whom the fry were given for distribution in their immediate localities, were very

prompt in looking after their allotment of fry and planting them in public streams.

The fry were distributed in the month of April, and we had such good success in planting them that we shall pursue the same course next year. We desire, however, to call attention to the fact that all applications for trout fry for planting in 1893 must be filed with the commissioners on or before March 1, 1893.

It may be remarked here that in connection with some gentlemen who reside in Salisbury, Mr. Follett has recently started some new trout ponds and a hatching house there, so that we can obtain a good supply of fry for distribution.

We append the reports of Mr. R. E. Follett for the years 1891 and 1892.

DISTRIBUTION OF TROUT FRY IN 1891.

WINDHAM, June 1, 1891.

To the Fish Commissioners of the State of Connecticut:

GENTLEMEN,—I would respectfully report the distribution of 335,000 young trout to the persons whose names are herewith appended, to be placed in open waters in this State.

RICHARD E. FOLLETT,
Superintendent of Trout Hatchery.

C. M. Platt.....	Ansonia	Fred. S. Phelps.....	Deep River
M. C. Hitchcock.....	Ansonia	James L. Pratt.....	Essex
Ellis J. Watson.....	Ansonia	J. S. Ely.....	Essex
J. A. Fiske.....	Ansonia	R. A. Griffing.....	Hartford
S. M. Blair.....	Ansonia	H. L. Bunce.....	Hartford
James B. Keene.....	Ansonia	James P. Hall.....	Hartford
J. W. Drew.....	Ansonia	R. S. Gladwin.....	Hartford
Rev. C. E. Woodcock.....	Ansonia	T. C. Nairdelle.....	Hartford
George M. Cole.....	Bethel	Milo B. Preston.....	Hartford
S. S. Ambler.....	Bethel	H. C. Dwight.....	Hartford
William H. Hill.....	Bethel	W. C. Skinner.....	Hartford
W. A. Beam.....	Bethel	W. J. McConville.....	Hartford
Robert B. May.....	Birmingham	H. M. Andrus.....	Hartford
Dr. C. B. Nettleton....	Birmingham	J. M. Davis.....	Hartford
Merwin Buck.....	Brookfield	Owen Brainerd.....	Higganum
S. E. Hawley.....	Brookfield	George H. Comstock....	Ivoryton
Maple Buck.....	Brookfield	George E. Comstock.....	Ivoryton
J. C. Capen.....	Bloomfield	O. D. Redfield.....	Madison
E. F. Coombs.....	Bloomfield	Henry A. Jobes.....	Long Hill
E. J. Coombs.....	Bloomfield	William A. Gabler.....	Long Hill
E. J. Chase.....	Bloomfield	Lewis Wakeley.....	Long Hill
W. S. Loveland.....	Bloomfield	J. W. French.....	Long Hill
C. E. Henn.....	Bloomfield	S. B. Hayes.....	Monroe
George E. Reed.....	Chaplin	Charles H. Berry.....	Norwalk

J. Y. Garrison..... Naugatuck
 R. E. Parker..... Naugatuck
 F. W. Tolles..... Naugatuck
 Charles H. Hoadley Naugatuck
 Walter H. Twitchell Naugatuck
 Joseph C. Flynn..... Naugatuck
 George C. Birdsall Naugatuck
 H. C. Baldwin..... Naugatuck
 C. B. Cadwell New Britain
 W. N. Dunham New Britain
 Dwight J. Smith..... New Britain
 W. H. Cadwell..... New Britain
 Charles E. Hadley.... New Britain
 Dr. R. C. Dunham.... New Britain
 J. H. Merriman... .. New Britain
 J. M. Crampton..... New Haven
 Enos S. Kimberly..... New Haven
 Henry A. Bishop..... New Haven
 M. B. Greene..... Norwich
 B. T. Greene..... Norwich
 Charles D. Boss, Jr. . . New London
 J. G. Crump..... New London
 George Prest..... New London
 Charles L. Ockford. . . New London
 Frank Chapel..... New London
 Charles D. Boss..... New London
 A. D. Chapel New London
 G. N. Woodruff New Milford
 H. O. Warner..... New Milford
 N. Staub..... New Milford
 I. B. Bristol New Milford
 Thomas Bray..... New Milford
 A. H. McMahon..... New Milford
 A. H. Squires New Milford
 W. H. Glover Newtown
 M. J. Houlihan..... Newtown
 George S. Goddard . North Granby
 Harvey Goddard. . . North Granby
 O. H. Goddard . . . North Granby
 J. W. Howard. North Granby
 Fred. M. Goddard... North Granby
 Dr. W. B. Munson Noroton
 Dr. E. H. Davis..... Plainfield
 E. P. Mathewson..... Pomfret
 John H. Sage Portland
 John H. Dady..... Putnam
 Charles H. Broadhurst..... Putnam
 Lucius H. Fuller..... Putnam

Samuel Rich..... Putnam
 S. Ambler..... Redding
 Seth Sanford..... Redding
 C. E. Osborne..... Redding
 John N. Nickerson..... Redding
 Thomas Mower Roxbury
 I. N. Bartram..... Sharon
 Willard Baker..... Sharon
 R. K. Underwood..... Sharon
 E. A. Deming..... Sharon
 Walter Bartram..... Sharon
 A. J. Bostwick..... Sharon
 S. P. Ensign..... Salisbury
 C. E. Barnum..... Salisbury
 J. L. Richardson Salisbury
 S. W. Bradley..... Salisbury
 M. B. Richardson..... Salisbury
 George E. Gager..... Salisbury
 Walter Norton Salisbury
 William Yale..... Salisbury
 John P. Gager..... Scotland
 L. T. Wooster..... Seymour
 William Holmes Shelton
 W. L. Clark..... Shelton
 John J. Hadlow..... Shelton
 W. J. Miller..... Shelton
 S. D. Lockwood..... Shelton
 J. Hill..... Shelton
 A. S. Winchester... South Windham
 E. C. Winchester... South Windham
 J. W. Treadwell.... Stepney Depot
 Jos. A. Treadwell .. Stepney Depot
 C. F. Osborn..... Stepney Depot
 Frank M. Beach..... Stamford
 H. C. Reed Stamford
 Hezekiah Weed..... Stamford
 J. Elmer Lockwood.... Stamford
 R. S. Hinman..... Stevenson
 George V. Towne..... Thompson
 William W. Carter Warren
 William J. Ford.. Washington Depot
 S. S. Baldwin .. Washington Depot
 C. H. Mason.... Washington Depot
 C. C. Ford Washington Depot
 P. G. Seeley..... Washington Depot
 F. W. Whitlock..... Waterbury
 Oliver J. Beach..... West Granby
 Porter Reed..... West Granby

Ford Huggins.....	West Granby	J. R. Montgomery...	Windsor Locks
A. L. Hayes.....	West Granby	Clinton Phelps	Windsor Locks
Benton Holcomb	West Granby	M. B. Bass.....	Willimantic
Bert Parmelee.....	West Granby	C. H. Townsend.....	Willimantic
George O. Beach	West Granby	H. T. Clark.....	Willimantic
H. C. Douglass	Windsor Locks	J. E. Brick	Willimantic
S. B. Douglass	Windsor Locks	Dr. T. R. Parker.....	Willimantic
E. B. Bailey.....	Windsor Locks	Harry Boss.....	Willimantic
Frank H. Towne...	Windsor Locks	Frank Fowler.....	Willimantic
F. H. Griswold.....	Windsor Locks	John Culver.....	Willimantic
C. F. Cleveland.....	Windsor Locks	Whit Dyer.....	Windham

DISTRIBUTION OF TROUT FRY IN 1892.

WINDHAM, May 31, 1892.

To the Fish Commissioners of the State of Connecticut:

I herewith submit the following names of persons to whom have been delivered their respective allotment (2,000) of trout fry:

RICHARD E. FOLLETT, *Superintendent.*

Edward J. Hill	Ansonia	E. B. Rich.....	East Hampton
F. M. Drew.....	Ansonia	Thomas P. Geer.....	Groton
J. A. Fiske.....	Ansonia	Samuel E. Elmore	Hartford
E. S. Sperry.....	Ansonia	John M. Taylor.....	Hartford
S. G. Gardner.....	Ansonia	William J. McConville	Hartford
C. M. Platt.....	Ansonia	J. A. Swift	Hartford
William G. White.....	Birmingham	A. Robinson	Hartford
A. J. Ewen.....	Birmingham	J. B. Chase	Hartford
George C. Woods....	Birmingham	H. J. Taylor	Hartford
R. B. May.....	Birmingham	G. T. Cadwell.....	Hartford
F. M. Bowen.....	Birmingham	C. C. Hern.....	Hartford
C. P. Nettleton	Birmingham	C. C. Goodrich	Hartford
R. R. Cone.....	Birmingham	F. E. Coombs.....	Hartford
George A. Moorehouse..	Bridgeport	D. S. Seymour	Hartford
W. J. Simmons.....	Central Village	Henry Andrus	Hartford
W. D. Rouse.....	Central Village	W. R. Wheeler.....	Hartford
John T. Morgan.....	Clinton	George Townsend	Hartford
C. E. Merrill.....	Clinton	H. L. Bunce.....	Hartford
Patrick Gorman	Derby	E. P. Curtis.....	Hartford
Mrs. A. D. Sturgis	Danbury	Lorin A. Cook.....	Hartford
S. M. Smith.....	Deep River	C. H. Case	Hartford
Charles R. Marion.....	Deep River	R. A. Griffing.....	Hartford
S. J. Nettleton.....	Durham	A. S. Cowles.....	Hartford
Wedworth Wadsworth ...	Durham	John R. Buck.....	Hartford
W. B. Smith.....	East Killingly	William L. Mathson.....	Hartford
William A. Miller.....	East Killingly	W. P. Barber.....	Lebanon
W. B. Markham	East Hampton	L. A. Manwaring.....	Lebanon
Hiram V. Child.....	East Hampton	Frank H. Kingsley.....	Lebanon
Frank W. Bevin.....	East Hampton	Charles H. Loomis.....	Lebanon

E. A. Stiles.....	Lebanon	R. J. Vance.....	New Britain
L. Spaulding.....	Lebanon	H. C. Williams	New Britain
J. L. Torrey.....	Long Hill	C. D. Owen.....	New Britain
W. A. Gabler	Long Hill	E. E. Warren.....	New Hartford
J. W. French	Long Hill	E. S. Kimberly.....	New Haven
C. W. Barnum.....	Lime Rock	Gardner Morse.....	New Haven
M. B. Richardson	Lime Rock	Gardner Morse, Jr.	New Haven
S. P. Ensign.....	Lime Rock	George A. Maycock....	New Haven
Wells Yale	Lime Rock	David H. Clark	New Haven
C. H. Wessing.....	Lime Rock	H. G. Shepard.....	New Haven
Samuel Bradley.....	Lime Rock	Edward Malley	New Haven
George E. Gager.....	Lime Rock	E. S. Kirkham.....	Newington
M. M. Norton	Lime Rock	H. M. Robbins.....	Newington
O. D. Redfield	Madison	E. W. Atwood	Newington
Charles E. Spencer.....	Madison	Nicholas Staub.....	New Milford
James R. Dowd.....	Madison	H. M. Mahone.	New Milford
M. Crompton.....	Madison	D. E. Soule.....	New Milford
E. E. Lord.....	Madison	George F. Risley.....	New Milford
Edward F. Jackson....	Middletown	John F. Addis.....	New Milford
Samuel L. Warner.....	Middletown	C. E. Smith.....	New Milford
S. Harris Warner	Middletown	C. E. Botsford.....	New Milford
Charles W. Warner....	Middletown	M. J. Houlihan.....	Newtown
Silas A. Robinson	Middletown	M. J. Cavanaugh	Newtown
J. Palmer.....	Middletown	W. H. Glover.....	Newtown
Charles W. Harris	Middletown	O. H. Goddard.....	North Granby
Everett B. Clark.....	Milford	R. J. Hayes	North Granby
Charles E. Smith.....	Milford	F. M. Loomis.....	North Granby
George J. Platt.....	Milford	William H. Clark....	North Granby
George F. Platt.....	Milford	Horace A. Stannard.....	Norfolk
Clifford E. Clark.....	Milford	Winthrop Cone	Norfolk
A. N. Clark.....	Milford	A. G. Atwood	Norfolk
Amos P. Taber.....	Moosup	Samuel Sanderson.....	Norwich
W. B. Smith	Moosup	Elisha P. Slocum.....	Norwich
Charles W. Comstock....	Montville	D. S. Stevens	Northford
Alex. C. Robertson.....	Montville	Nathan Edwards.....	Old Saybrook
J. E. Robertson.....	Montville	Charles L. Ockford...	New London
Charles H. Clark.....	Milldale	E. M. Chapin.....	Pine Meadow
Jeremiah Holmes.....	Mystic	Edward Milner.....	Plainfield
E. A. Schofield.....	Mystic	E. H. Davis	Plainfield
George H. Ives.....	Mystic	G. Lewis	Plainville
R. D. Ketcham	Mystic	W. L. Cook.....	Plainville
R. C. Dunham.....	New Britain	R. M. Griswold	Portland
D. J. Smith.....	New Britain	Samuel Rich.....	Putnam
J. H. Merriman	New Britain	Charles M. Fenner	Putnam
Charles E. Hadley.....	New Britain	G. Byron Morse	Putnam
James H. Miner.....	New Britain	Charles H. Broadhurst	Putnam
William H. Cadwell....	New Britain	John A. Dady.....	Putnam
W. A. Dunham.....	New Britain	C. W. Hodge.....	Roxbury

Robert T. Blades.....	Roxbury	Herbert L. Veith....	Thompsonville
T. E. Mower.....	Roxbury	N. P. Palmer.....	Thompsonville
W. F. Hoxie.....	Roxbury	Miner Drake.....	Torrington
Dwight Carey.....	Scotland	A. P. Hine.	Torrington
L. J. Wooster.....	Seymour	Gardner H. Welch.....	Torrington
G. E. Matthews.	Seymour	P. R. Day.....	Unionville
C. H. Guild.....	Seymour	T. C. Georgie	Unionville
Charles W. Dick	Seymour	J. P. Stevenson.....	Wallingford
R. R. Woodward.....	Sharon	Anna D. Nevins.....	Waterford
F. S. Sanford.....	Shelton	G. W. Tucker.....	Waterville
S. D. Lockwood	Shelton	John P. Kellogg.....	Waterbury
W. S. Clark.....	Shelton	D. B. Hamilton	Waterbury
William Holmes	Shelton	John W. Hill.....	Waterbury
W. J. Miller.....	Shelton	George E. Hart.....	Waterbury
W. C. Backus	South Windham	F. J. Brown	Waterbury
F. E. Pearl.....	South Windham	J. W. Webster	Waterbury
J. L. Palmer.....	South Windham	Gen. S. W. Kellogg....	Waterbury
James R. Davenport....	Stamford	A. D. Pierpont.....	Waterbury
John Davenport.....	Stamford	Charles Frost.....	Waterbury
J. A. Treadwell.....	Stepney Depot	T. S. Gold.....	West Cornwall
J. W. Treadwell.....	Stepney Depot	Simon Mackintire...	West Cornwall
R. S. Hinman..	Stevenson	Harry Sedgwick ..	West Cornwall
Charles D. Goodwin, South Meriden		Columbus Reed	West Granby
Chas. B. Wilkinson, South Meriden		S. F. Holcomb.....	West Granby
George M. Howell, South Meriden		George O. Beach.....	West Granby
W. P. Hall.....	South Meriden	James A. Fancher	West Granby
R. Wilkinson	South Meriden	H. N. Graham.....	West Granby
A. L. Collins	South Meriden	Seth Sanford.....	West Redding
Lewis E. Clark ...	South Meriden	George A. Rockwell	Wapping
W. A. Arden.....	South Meriden	Gen. E. S. Boss.....	Willimantic
E. B. Clark	South Meriden	Julius Pinney.....	Willimantic
George P. McLean.....	Simsbury	E. G. Hatheway.....	Willimantic
J. C. Phelps	Simsbury	D. E. Potter.....	Willimantic
Geo. E. Matthewson, Thompsonville		Frank Fowler.....	Willimantic
John H. Fowler.....	Thompsonville		

SHAD.

The Commissioners are obliged to report a decrease in the catch of shad for the past two years. We have carried on the hatching operations at Birmingham each year, but the catch has not increased. There are many reasons assigned for this, but no one of them seems to be entirely satisfactory. Colonel McDonald, of the United States Fish Commission, reports that the catch of shad in the Potomac and other southern waters is increasing, but this is not the experience of the fishermen in our waters.

Our present plan of distributing the fry is to plant them as soon as they are large enough to take care of themselves in our large

rivers, notably the Connecticut, Housatonic, Thames, and Quinnipiac. We do not believe that this gives the best results, and we should like to try the plan of making one or more small ponds which can overflow into the larger streams, plant the fry in them, and let them live there until fall, when they will have attained quite a growth and are much more able to take care of themselves. Then open the gates and let them go down stream. Colonel McDonald has tried this way of planting them with very great success in the Potomac.

These retaining ponds would be clear of all other fish and the fry would have a splendid chance to thrive and grow; besides, a very much larger percentage of them would reach maturity; as it is now, planting them directly in the large streams, many of them are killed and more are eaten up by other and larger fish.

We believe this plan is worthy of a thorough trial, and it really seems to be the most feasible plan offered to increase our shad supply. The shad is a very valuable food fish, in fact the most valuable that frequents our waters, and some decisive steps must be taken to preserve them.

The amount expended by our State for shad propagation is very small considering the value of the fish as a food supply, and a reasonable amount of money expended in testing the plan of building one or more retaining ponds will demonstrate if this will prove an effective way of increasing the supply.

We trust that the General Assembly will consider this matter very carefully and make an appropriation for this purpose.

The reports of the Superintendent of the hatchery at Birmingham for the past two years are given in detail:

SAYBROOK, CONN., August 1, 1891.

To the Board of Fish Commissioners:

GENTLEMEN,—I herewith submit my report of the shad hatching operations for the year 1891, at Birmingham, on the Housatonic River. We worked under extraordinary difficulties during this season, owing to the fact that in the month of January a portion of the large dam across the Housatonic River, at Birmingham, was taken out in a heavy freshet. During all the time that we were working there the company owning the dam were rebuilding it, and, as a consequence, the river was filled full of stones, brush, and other refuse matter. The places where we had previously hauled were full of these obstructions, and hauls were exceedingly difficult to make, so much so that our nets were torn on several different occasions.

Notwithstanding all these difficulties, we succeeded in taking 2,050,000 eggs, from which we obtained 1,906,000 fry. The fry were distributed as follows: 1,033,000 in the Connecticut River and its tributaries and 873,000 in the Housatonic.

Respectfully submitted,

ROBERT A. CHALKER, *Superintendent.*

REPORT OF SHAD HATCHING ON THE HOUSATONIC RIVER AT
BIRMINGHAM FOR 1891.

1891.	Degrees of Temperature of water.		Number of Eggs Taken.	Number of Fish Planted.	Remarks.
	Morning.	Evening.			
May 17	60	60	.....	.....	No ripe shad.
18	60	58	.....	.....	No ripe shad.
19	56	56	.....	.....	No ripe shad.
20	55	55	.....	.....	No fish taken.
21	65	67	.....	.....	No fish taken.
22	66	66	217,000	.....	.....
23	66	67	212,000	.....	.....
24	67	68	224,000	.....	.....
25	70	63	133,000	.....	.....
26	69	64	.....	.....	Freshet.
27	63	63	.....	.....	Freshet.
28	63	63	30,000	.....	Freshet.
29	64	62	.....	408,000	Freshet — no fishing done.
30	63	64	.....	.....	Freshet — no fishing done.
31	66	66	.....	.....	No ripe shad.
June 1	67	67	.....	338,000	No ripe shad.
2	68	68	.....	28,000	No ripe shad.
3	69	70	40,000	.....	.....
4	70	70	183,000	.....	.....
5	70	70	40,000	.....	.....
6	68	67	.....	.....	.....
7	64	64	.....	.....	No ripe shad.
8	64	65	67,000	30,000	.....
9	66	66	196,000	.....	.....
10	70	70	314,000	205,000	.....
11	70	70	.....	.....	No buck shad.
12	72	74	283,000	62,000	.....
13	72	76	.....	185,000	.....
14	78	78	.....	.....	.....
15	80	80	.....	569,000	.....
16	80	82	.....	.....	No buck shad.
17	80	84	21,000	.....	.....
18	72	73	.....	.....	No ripe shad.
19	70	68	70,000	.....	.....
20	67	67	.....	.....	.....
21	66	66	20,000	17,000	.....
22	68	69	.....	.....	Eggs poor.
23	70	71	.....	50,000	Eggs poor.
24	72	74	.....	.....	Eggs poor.
25	75	77	.....	14,000	Eggs poor.
			2,052,000	1,906,000	

SAYBROOK, CONN., August 1, 1892.

To the Board of Fish Commissioners :

GENTLEMEN,—I respectfully submit my report concerning the shad hatching operations for the season of 1892 at Birmingham, on the Housatonic River. This season was particularly unfavorable for the taking of shad. We spent several days in clearing the hauling grounds near the Housatonic dam of stones and stumps. These were what were left over from the repairs made on that dam last year. We commenced operations on May 17th, and within two or three days thereafter a severe rain made a very high freshet in the river, which lasted about one week, during which time we did not take any fish. There seemed to be, during the time that we were there, a good many buck shad, but very few ripe roe shad. We could catch a good number of buck shad most every night, but very few roe shad. We fished in several different places in the river, but had the same results ; for some reason or another, the roe shad were very scarce in the Housatonic last season.

We succeeded in taking 1,599,000 eggs, from which we obtained 1,362,000 fry. They were distributed as follows : 783,000 in the Connecticut River and its tributaries, and 579,000 in the Housatonic River and its tributaries.

We were bothered this year, as we have been in previous years, by illegal fishing for shad by parties living in that vicinity. We had the good fortune to catch one of them while he was engaged in hauling a seine in a place used by us for hauling, and he was arrested and fined. This seemed to have some effect upon them, and we were not bothered afterwards, so far as we could discover, with their fishing.

Respectfully submitted,

ROBERT A. CHALKER, *Superintendent.*

REPORT OF SHAD HATCHING ON THE HOUSATONIC RIVER AT
BIRMINGHAM FOR 1892.

1892.	Degrees of Temperature of Water.		Number of Eggs Taken.	Number of Fish Planted.	Remarks.
	Morning.	Evening.			
May 17	60	60	91,000	.....	.....
18	62	62	138,000	.....	.....
19	63	62	79,000	.....	.....
20	60	58	.....	.....	Freshet; no ripe shad.
21	55	54	.....	.....	Saturday.
22	53	51	.....	.....	Freshet; no fishing.
23	51	51	.....	.....	Freshet; no fishing.
24	53	54	.....	.....	Freshet; no fishing.
25	55	56	.....	.....	Freshet; no fishing.
26	58	60	70,000	.....	Freshet; no fishing.
27	60	60	42,000	.....	Rain storm.
28	60	61	.....	.....	Saturday.
29	61	62	.....	.....	Freshet; no fishing.
30	62	63	2,000	252,000	Freshet; no fishing.
31	64	58	.....	.....	Freshet; no roe shad.
June 1	68	70	129,000	.....	.....
2	73	72	24,000	.....	.....
3	75	73	.....	.....	No roe shad.
4	72	70	.....	100,000	.....
5	70	70	2,000	.....	.....
6	70	70	21,000	.....	.....
7	70	68	105,000	144,000	.....
8	70	70	275,000	.....	.....
9	69	68	157,000	.....	.....
10	69	69	60,000	.....	.....
11	70	69	155,000	68,000	.....
12	68	69	72,000	.....	.....
13	73	75	70,000	.....	.....
14	75	76	.....	91,000	Thunder shower; no fishing
15	78	78	35,000	365,000	.....
16	78	78	15,000	.....	.....
17	78	78	12,000	206,000	.....
18	78	78	.....	.....	Saturday.
19	74	74	15,000	.....	.....
20	75	77	30,000	80,000	.....
21	79	79	.....	27,000	No good eggs.
22	79	79	.....	.....	No fishing done.
23	79	80	.....	.....	No fishing done.
24	79	79	.....	29,000	No fishing done.
			1,599,000	1,362,000	

CATCH OF SHAD AS REPORTED TO THE COMMISSIONERS FOR THE
YEARS 1891 AND 1892.

	1891.	1892.
Number of shad caught in pounds.....	6,994	4,650
Number of shad taken in the Connecticut River in gill nets and hauling seines.....	13,509	13,726
Number of shad taken in the Housatonic River in gill nets and hauling seines.....	1,959	589
Total catch.....	22,462	18,965

The jelly fish were very plentiful the past season, and interfered so with the pound fishing that in some places the pounds were torn to pieces.

MEETING OF THE NEW ENGLAND COMMISSIONERS.

In the month of November, 1891, the Commissioners were invited to meet with the commissioners of the other New England States at Boston. This meeting was held in response to a resolution adopted by the Legislature of the State of Massachusetts at the session of 1891, and was for the purpose of consulting concerning the adoption of uniform laws for the protection of food fishes in the New England States.

The meeting was held at the State House, in Boston, Tuesday, November 24th. There were present commissioners from all the New England States. A very interesting meeting was held, and the question of uniform laws for the protection of food fishes in our States was discussed. It was the sense of the meeting, after discussing the matter pretty much the entire day, that owing to the wide difference in climate in the New England States, uniform laws would not prove satisfactory.

The meeting was, however, adjourned, to be called together at the discretion of the Chairman of the Massachusetts Commission, and we expect that there will be a further meeting, probably in the month of November of the present year.

This subject is one of very great importance, and should be thoroughly investigated and looked into. There is no question but what the supply of food fishes in all of our New England States is becoming scarcer each year, and some steps must be taken to furnish a more abundant supply. This Commission is in favor of taking such steps in the matter as will produce this result, and we believe that in the end some laws will be adopted on this subject which will be uniform to a considerable extent, so that the beneficial effect of laws of this character will be felt here in Connecticut.

SALMON.

But very few salmon have been caught in our waters during the past two years that have come to the knowledge of the Commissioners. A few have been taken in the salt water near the mouth of some of our large rivers, but the information that we have been able to obtain about them has been very meager.

We append to this report the record of pounds and traps, for which we have designated numbers during the past two years.

The financial statement, showing amounts paid by the Board for the past two years, is also appended, as is also the latest corrected list of Fish Commissioners of the United States and Canada that we have been able to obtain.

All of which is very respectfully submitted,

JAMES A. BILL.	}	<i>Fish Commissioners</i>
ROBERT B. CHALKER.		
WILLIAM S. DOWNS,		

HARTFORD, Oct. 31, 1892.

Financial Statement.

REPORT FOR YEAR ENDING JUNE 30, 1891.

Balance on hand for trout, July 1, 1890.....	\$992 92	
“ “ shad, July 1, 1890.....	1,004 50	
“ “ Fish Commissioners, July 1, 1890,	817 61	
	<hr/>	\$2,815 03
Paid R. E. Follett for trout fry.....	\$992 92	
“ shad hatching expenses.....	1,003 88	
Amounts drawn by Fish Commissioners.....	486 48	
Balance to be covered back into the Treasury, June 30, 1891.....	331 75	
	<hr/>	2,815 03

REPORT FOR YEAR ENDING JUNE 30, 1892.

Paid for trout fry.....	\$1,434 00	
“ printing, blanks, etc.....	23 75	
“ shad hatching.....	871 12	
“ 15 fish cans.....	63 67	
Drawn by Fish Commissioners.....	397 35	
Total.....	<hr/>	\$2,789 89

Pounds and Traps.

RECORD OF POUNDS AND TRAPS, WITH THE NUMBERS AND NAMES OF APPLICANTS, FOR THE YEAR 1891.

- | | | |
|-----|-----|---|
| No. | 1. | William Spicer, Groton, off Spicer's Point. |
| | 2. | E. W. Cook, Niantic, off south end Black Point. |
| | 3. | Fred. Ostman, Stonington, off Southwest Rip Rap. |
| | 4. | F. H. Beckwith, Niantic, east side Black Point Bay. |
| | 5. | F. H. Beckwith, Niantic, off Goshen Point, west side New London Harbor. |
| | 6. | Fred. Ostman, Stonington, west side Stonington Point. |
| | 7. | Fred. Ostman, Stonington, east side Stonington Point. |
| | 8. | Fred. Beckwith, Westerly, off Gravely Beach, Pawentuck River. |
| | 9. | J. F. Chapman, Groton, off Goshen Point. |
| | 10. | J. F. Chapman, Groton, south of Bushy Point. |
| | 11. | E. M. Ashley, Noank, west side of Mason's Island. |
| | 12. | Samuel M. Coles, Noank, off Long Point. |
| | 13. | Samuel M. Coles, Noank, off Lydia's Island. |
| | 14. | Roswell & Thomas Fish, Noank, off House Point. |
| | 15. | Roswell & Thomas Fish, Noank, off Bluff Point. |
| | 16. | Roswell & Thomas Fish, Noank, off Allyn's Point. |
| | 17. | E. W. Cook, Niantic, between Rope Ferry and Howard House. |
| | 18. | E. W. Cook, Niantic, northwest of Waterford Island. |
| | 19. | James M. Raymond, Niantic, north side Niantic Bay. |
| | 20. | James P. Clark, East Marion, L. I., off Williston Point. |
| | 21. | James P. Clark, East Marion, L. I., southeast of Goose Island. |
| | 22. | James P. Clark, East Marion, L. I., off Robert Payne's Shore. |
| | 23. | James M. Raymond, Niantic, off Bloody Point. |
| | 24. | Maltby Gelston, East Haddam, in said town. |
| | 25. | James P. Clark, East Marion, off Frank Nicoll's. |
| | 26. | John M. Chapman, Groton, off Eastern Point, running southeast. |
| | 27. | Maltby Gelston, East Haddam. |
| | 28. | A. L. Sherman, Niantic, west side Black Point. |
| | 29. | A. L. Sherman, Niantic, west of Luce Fish Works. |
| | 30. | A. L. Sherman, Niantic, off Beckwith Neck. |
| | 31. | A. L. Sherman, Niantic, east of Hatchett's Point. |
| | 32. | F. H. Beckwith, Niantic, east of Hatchett's Point. |
| | 33. | James M. Raymond, Niantic, off Champlin's Point. |
| | 34. | James M. Raymond, Niantic, off Champlin's Point. |
| | 35. | F. N. Beckwith, Niantic, southeast of Black Point. |
| | 36. | Charles N. Chapman, Groton, off F. Bill's Land. |
| | 37. | Charles N. Chapman, Groton, off Groton Shore. |

- No. 38. R. W. Gavitt, Waterford, near Millstone Point.
39. R. W. Gavitt, Waterford, continuation of same outside.
40. R. W. Gavitt, Waterford, 75 rods of the two.
41. James P. Clark, East Marion, off Crescent Beach.
42. James P. Clark, East Marion, on same line 300 feet further out.
43. Russell C. Bogue, Poquonock Bridge, west of New London Light.
44. Russell C. Bogue, Poquonock Bridge, off Pine Island, east side
New London Light.
45. Fred Ostman, Stonington, Little Narragansett Bay.
46. F. N. Burdick, Stonington, in Pawcatuck River.
47. F. N. Burdick, Stonington, in Pawcatuck River.
48. F. N. Burdick, Stonington, at Breakwater southeast of Stonington.
49. T. D. Babcock, Westerly, R. I., Pawcatuck River Narrows.
50. Ellery Barber, Westerly, R. I., Pawcatuck Rock.
51. Joshua P. Clark, Westerly, R. I., west side of Barn Island.
52. E. M. Ashley, Noank, south point Dodge Island.
53. Moses H. Wilcox, Mystic Bridge, southwest of Woodbridge Island.
54. F. H. Beckwith, Niantic, west side Black Point.
55. R. T. Chapman, Mystic Bridge, off southwest point Andrews
Island.
56. R. T. Chapman, Mystic Bridge, east side Mason's Island.
57. W. M. Baker, Niantic, west side Black Point Bay.
58. W. M. Baker, Niantic, west side Black Point Bay.
59. Jno. F. Bushnell, Saybrook, off Guard House Point.
60. Moses H. Wilcox, Mystic Bridge, east of Lydia Island.
61. George W. Wilcox, Mystic Bridge, off Cedar Point.
62. George W. Wilcox, Mystic Bridge, east of Baker's Island.
63. Samuel M. Coles, Noank, off Andrews Island.
64. Moses H. Wilcox, Mystic, southeast of Convent Rocks.
65. Fred. Ostman, Stonington, southwest of Whamphannock Point.
66. Fred. Ostman, Stonington, east side of Whamphannock Point.
67. E. M. Ashley, Noank, east side of Lodge Island.
68. James P. Thompson, Westerly, east of Osbroke Point.
69. James P. Thompson, Westerly, southeast of Edwards Island.
70. James P. Thompson, Westerly, Pawcatuck River.
71. C. H. Chapman, Westbrook, off Kelsey Point.
72. R. H. Stannard & Bro., Westbrook, off Money Point.
73. Jno. F. Bushnell, Old Saybrook, west of Light House.
74. George M. Denison, Old Saybrook, off Gardner's Bay.
75. F. D. Waterhouse, Chester, off Parker's Point.
76. F. D. Waterhouse, Chester, off Parker's Point.
77. Eliott Bros., Clinton, off Kelsey Point.
78. Eliott Bros., Clinton, off Clinton Harbor.
79. Stannard & Chapman, Clinton, off Grove Beach.
80. G. L. Post, Westbrook, Salt Work Pound.
81. Frank M. Chalker, Old Saybrook, in Gillett's Bay.
82. Frank M. Chalker, Old Saybrook, Willard's Bay.
83. Samuel A. Chalker, Old Saybrook, west of Cornfield Point.

- No. 84. Fred. Ottman, Stonington, off Nate Point, in harbor.
 85. Edward Clark, Stonington, west end railroad bridge, south side.
 86. Edward Clark, Stonington, at Marsh Point, west side harbor.
 87. Edward Clark, Stonington, Watering Fence, west side of harbor.
 88. Edward Clark, Stonington, north side of west breakwater.
 89. F. N. Burdick, Westerly, off Barn Island.
 90. James H. Wells, Poquonock Bridge, east end of Poquonock Beach.
 91. Moses H. Wilcox, Mystic, Noyes Rocks, west of Woodbridge Island.
 92. Leander Wilcox, Mystic Bridge, south end Andrews Island.
 93. Leander Wilcox, Stonington, south end Andrews Island.
 94. Alfred A. Baker, Stonington, north side Gates Island.
 95. Elias F. Wilcox, Mystic Bridge, south of Lydia's Island.
 96. Rowland W. Wilcox, Mystic Bridge, at Two Rocks, Fisher's Island Sound.
 97. Orrin A. Wilcox, Mystic Bridge, east side Mason's Island, Fisher's Island Sound.
 98. Alfred A. Baker, Mystic Bridge, south end Sand Spit, Fisher's Island Sound.
 99. R. W. Gavitt, Waterford, near Pleasure Beach.
 100. J. M. Raymond, Niantic, off Blood Point, connection with No. 3.
 101. Charles H. Eccleston, Jr., Mystic, Mystic Island Bay, opposite side.
 102. F. N. Burdick, Stonington, new South Breakwater, north side.
 103. Stephen Wilcox, Mystic, southeast of Andrews Island.
 104. Stephen Wilcox, Mystic, south of Screecher's Rock, Fisher's Island Sound.
 105. E. R. Wilcox, Mystic, southwest of Screecher's Rock, Fisher's Island Sound.
 106. F. D. Babcock, Westerly, off Randall's Point.
 107. Horace E. Kelsey, Westbrook, opposite Great Rocks, in Westbrook Bay.
 108. Charles H. Hurd, Clinton, east side Clinton Harbor.
 109. Jno. F. Bushnell, Old Saybrook, west of West Jetty, Connecticut River.
 110. R. P. Sawyer, Noank, Gates Island, near Mystic Island.
 111. R. H. Wilcox, Mystic, east side of Ram Island.
 112. R. H. Wilcox, Mystic, west side Ram Island.
 113. James P. Clark, East Marion, L. I., southeast of Millstone Point.
 114. J. H. Wells, Poquonock Bridge, one-half mile west Goshen Point.
 115. Albert Dibble, Clinton, west end Grove Beach.

RECORD OF POUNDS AND TRAPS, WITH THE NUMBERS AND NAMES OF
 APPLICANTS, FOR THE YEAR 1892.

- No. 1. William Spicer, Groton, off Spicer's Point.
 2. E. W. Cook, Niantic, off south end Black Point.
 3. Fred. Ostman, Stonington, off Southwest Rip Rap.
 4. F. H. Beckwith, New London, east side Black Point Bay.

- No. 5. F. H. Beckwith, New London, off Goshen Point, west side New London Harbor.
6. Fred. Ostman, Stonington, west side Stonington Point.
7. Fred. Ostman, Stonington, east side Stonington Point.
11. E. M. Ashley, Noank, west of Mason's Island.
12. Samuel M. Cole, Noank, off Long Point.
13. Samuel M. Cole, Noank, off Lydia's Island.
18. E. W. Cook, Niantic, northwest of Waterford Island.
19. James M. Raymond, Niantic, north side of Niantic Bay.
20. James P. Clark, East Marion, L. I., off Millstone Point, Waterford.
21. James P. Clark, East Marion, L. I., southeast of Goose Island.
22. James P. Clark, East Marion, L. I., off Robert Payne's Shore.
23. James M. Raymond, Niantic, off Bloody Point, East Lyme.
24. Maltby Gelston, East Haddam Pond, for alewives discharging into river.
25. James P. Clark, East Marion, L. I., east line Frank Nicoll's shore.
26. Jno. M. Chapman, Groton, off Eastern Point, Groton.
27. Maltby Gelston, East Haddam.
28. A. L. Sherman, Niantic, west side Black Point.
29. A. L. Sherman, Niantic, west of Luce Fish Works.
30. A. L. Sherman, Niantic, off Beckwith Neck.
31. A. L. Sherman, Niantic, off Hatchett's Point.
32. Jno. Robbins, Niantic, Griswold's Island, Black Point.
33. J. M. Raymond, Niantic, off Champlin Point.
34. J. M. Raymond, Niantic, off Champlin Point.
35. F. H. Beckwith, New London, southeast Black Point.
38. R. W. Gavitt, Waterford, near Millstone Point.
39. R. W. Gavitt, Waterford, continuation outside.
40. R. W. Gavitt, Waterford, 75 rods south of the two above.
41. James P. Clark, East Marion, L. I., off Crescent Beach.
42. James P. Clark, East Marion, L. I., same line 300 feet further out.
43. R. C. Bogue, Poquonock Bridge, west of New London Light House.
44. R. C. Bogue, Poquonock Bridge, off Pine Island, east side New London Light House.
45. Fred. Ostman, Little Narragansett Bay.
46. F. N. Burdick, Westerly, R. I., Pawcatuck River.
49. T. D. Babcock, Westerly, R. I., Pawcatuck River Narrows
51. Jno. Robbins, Black Hall, west of Cornfield Point.
52. E. M. Ashley, Noank, South Point, Dodge Island.
53. M. H. Wilcox, Mystic Bridge, southwest of Woodbridge Island.
54. F. H. Beckwith, New London, west side Black Point.
55. F. T. Chapman, Mystic, off Southwest Point, Andrews Island.
56. F. T. Chapman, Mystic, east side Mason's Island, opposite Fish Works.
59. D. C. Spencer, Saybrook, off Guard House Point.
60. M. H. Wilcox, Mystic Bridge, east of Lydia Island.
61. G. W. Wilcox, Mystic Bridge, off Cedar Point.

- No. 62. G. W. Wilcox, Mystic Bridge, east of Baker's Island.
- 63. R. P. Sawyer, Noank, east side Ram Island Bay.
- 64. Moses H. Wilcox, Mystic Bridge, southeast of Convent Rocks.
- 65. Fred. Ostman, Stonington, southwest of Whamphannock Point.
- 66. Fred. Ostman, Stonington, east side of Whamphannock Point.
- 67. E. M. Ashley, Noank, east side of Dodge Island.
- 68. James Thompson, Westerly, east side of Osbrooke Point.
- 69. James Thompson, Westerly, southeast of Edwards Island.
- 70. James Thompson, Westerly Dam, Pawcatuck River.
- 72. R. H. Stannard & Bro., Westbrook, off Money Point.
- 73. Jno. F. Bushnell, Old Saybrook, next west of Light House.
- 74. Jno. F. Bushnell, Old Saybrook, second west of Light House.
- 84. Fred. Ostman, Stonington, off Wate's Point, east side harbor.
- 85. Ed. P. Clark, Stonington, west end railroad bridge, south side harbor.
- 86. Jno. Robbins, Black Hall, off Bond's Beach, Niantic.
- 87. Ed. P. Clark, Stonington, Watering Place Fence, west side.
- 88. Jno. Robbins, Black Hall, east side Black Point.
- 89. F. A. Burdick, Westerly, off Barn Island, Stonington.
- 90. James H. Wells, Poquonock Bridge, east end Poquonock Beach.
- 92. R. H. Wilcox, Mystic, at Noyes Rocks, Fisher's Island Sound.
- 93. R. H. Wilcox, Mystic, southeast Andrews Island.
- 94. Elias W. Champion, Black Hall, Stoney Point, Old Lyme.
- 95. Elias W. Champion, Black Hall, Guard House Point, Old Lyme.
- 96. Elias W. Champion, Black Hall, off Griswold Beach, Old Lyme.
- 97. Orrin A. Wilcox, Mystic, east side Mason's Island.
- 98. Amos Bunnell, Poquonock Bridge, opposite Poquonock Beach.
- 99. R. W. Gavitt, Waterford, near Pleasant Beach Dock.
- 100. J. M. Raymond, Niantic, off Bloody Point.
- 101. C. H. Eggleston, Jr., Mystic, Mystic Island Bay.
- 105. D. E. Wilcox, Mystic, southwest of Schreecher's Rock, Fisher's Island Sound.
- 106. T. E. Babcock, Westerly, R. I., off Randall's Point.
- 108. Charles H. Hurd, Clinton, west side Clinton Harbor, off Hammock Point.
- 110. Zial Stannard & Brother, Clinton, first place west of Munketesuck Point.
- 111. R. H. Wilcox, Mystic, Northeast Point, Ram Island, east side.
- 113. James P. Clark, East Marion, L. I., southeast Millstone Point.
- 114. R. P. Sawyer, Noank, east side of Mason's Island.
- 115. Allen Dibble, Westbrook, west end Grove Beach.
- 116. James M. Raymond, Niantic, south side Wigwam Rock, Niantic Bay.

List of Fish Commissioners.

THE UNITED STATES.

Col. Marshall McDonald, Commissioner.....Washington, D. C.
 Captain J. W. Collins, Assistant in charge of Fisheries Division.
 Richard Rathbun, Assistant in charge of Scientific Inquiry.

ALABAMA.

Col. D. R. Hundley.....Madison
 Hon. Charles S. G. Doster.....Prattville

ARIZONA.

T. W. Otis.....Prescott
 John Howard.....Prescott
 C. W. Stearns.....Phenix

ARKANSAS.

H. H. Rottaken, President.....Little Rock
 W. B. Worthen, Secretary.....Little Rock
 J. W. Callaway.....Little Rock

DOMINION OF CANADA.

Hon. C. H. Tupper, Minister of Marine and Fisheries.....Ottawa
 Hon. John Tilton, Deputy Minister.....Ottawa
 S. P. Bauset, Chief Clerk.....Ottawa
 Samuel Wilmot, Superintendent of Fish Culture.....Ottawa
 Inspectors of Fisheries: J. R. Kinney, Yarmouth, N. S.; R. C. Hockin,
 Pictou, N. S.; A. C. Bertram, North Sydney, N. S.; J. H. Pratt, St.
 Andrews, N. B.; R. A. Chapman, Moncton, N. B.; D. Morrow,
 Oromocto, N. B.; E. Hackett, Tignish, P. E. I.; W. Wakeman, Gaspé
 Basin, P. Q.; Thomas Mowat, New Westminster, B. C.; Alex Mc-
 Queen, Winnipeg, Manitoba; F. C. Gilchrist, Fort Qu'Appelle, N. W. T.
 Officers in Charge of Fish-Breeding Establishments: S. Wilmot, Superin-
 tendent of Fish Culture, Newcastle, Ont.; Charles Wilmot, Officer in
 Charge, Newcastle hatchery, Ont.; Wm. Parker, Sandwich, Ont.; L. N.
 Cattelier, Tadoussac, Q.; H. Davis, Gaspé, Q.; A. H. Moore, Magog,
 Q.; Alex Mowat, Restigouche, Matapédia, P. Q.; A. B. Wilmot, Bed-
 ford, N. S.; C. A. Farquharson, Sydney, N. S.; Isaac Sheasgreen,
 Miramichi, N. B.; Charles McCluskey, St. John River, Grand Falls,
 N. B.; Henry Clark, Dunk River, P. E. I.; Thomas Mowat, British
 Columbia hatchery, New Westminster, B. C.

NEWFOUNDLAND.

Hon. A. W. Harvey, Chairman.....	St. Johns
M. Harvey, Secretary.....	St. Johns
Adolph Nielson, Superintendent of Fisheries.....	St. Johns

CALIFORNIA.

Joseph Routier.....	Sacramento
J. D. Harvey.....	Los Angeles
C. M. Joslyn.....	San Francisco

COLORADO.

Gordon Land.....	Denver
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CONNECTICUT.

James A. Bill.....	Lyme
Robert B. Chalker.....	Saybrook
William S. Downs	Birmingham

DELAWARE.

Charles H. Shubert	Odessa
Dr. E. G. Shortlidge, Superintendent of Hatcheries	Wilmington

GEORGIA.

R. T. Nesbitt.....	Atlanta
Dr. H. H. Cary, Superintendent.....	La Grange

ILLINOIS

N. K. Fairbank, President.....	Chicago
S. P. Bartlett.....	Quincy
George Breuning.....	Centralia

INDIANA.

Col. W. T. Dennis.....	Richmond
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IOWA.

E. D. Carlton.....	Spirit Lake
Ole Bjorenson, Superintendent.	

KANSAS.

John M. Brumbaugh.....	Concordia
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MAINE.

E. M. Stillwell.....	Bangor
Henry O. Stanley.....	Dixfield
E. W. Gould, Sea and Shore Fisheries.....	Searsport

MARYLAND.

G. W. Delawder.....	Oakland
G. R. Rider.....	Salisbury

MASSACHUSETTS.

E. A. Brackett.....	Winchester
I. C. Young.....	Wellfleet
E. H. Lathrop.....	Springfield

MICHIGAN.

Hoyt Post.....	Detroit
Herschel Whitaker.....	Detroit
Joel C. Parker, M. D.....	Grand Rapids
Walter D. Marks, Superintendent.....	Paris
George D. Mussey, Secretary.....	Detroit
William A. Butler, Jr., Treasurer.....	Detroit

MINNESOTA.

William Bird.....	Fairmont
Niles Carpenter.....	Rushford
Robert Ormsby Sweeney, President.....	Duluth
S. S. Watkins, Superintendent	Willow Brook, St. Paul

MISSOURI.

H. M. Garlichs, Chairman.....	St. Joseph
J. L. Smith.....	Jefferson
Edw. Cunningham.....	St. Louis
A. C. Garlichs, Secretary	St. Joseph
Philip Kopplin, Jr., Superintendent.....	St. Louis
James W. Day, Superintendent.....	St. Joseph

NEBRASKA.

William L. May.....	Fremont
J. C. McBride.....	Lincoln
B. E. B. Kennedy.....	Omaha
M. E. O'Brien, Superintendent.....	South Bend

NEVADA.

George T. Mills.....	Carson City
Ernest Harris, Deputy.....	Carson City

NEW HAMPSHIRE.

George W. Riddle.....	Manchester
Elliott B. Hodge.....	Plymouth
W. H. Griffin.....	Henniker
Elliott B. Hodge, Superintendent of Plymouth and Sunapee Hatcheries,	Plymouth

NEW JERSEY.

William Wright.....	Newark
Frank M. Ward.....	Newton
Robert D. Foote.....	Morristown
W. A. Newell.....	Pennsville

NEW YORK.

E. G. Blackford, President	New York
L. Huntington,	New Rochelle
William H. Bowman	Rochester
A. S. Joline,	Tottenville
Henry Burden	Troy
E. P. Doyle, Secretary, Room 311, Potter Building	New York City
Superintendents: Fred Mather, Cold Spring Harbor; Monroe A. Green, Caledonia; E. L. Marks, Fulton Chain; E. F. Boehm, Mill Creek, and J. G. Roberts.	
Shell-fish Commission: E. G. Blackford, Commissioner; William G. Ford, Engineer; J. W. Merserau, Oyster Protector, 80 Fulton Market, New York. Chief Game and Fish Protector, J. W. Pond, Albany.	

OHIO.

C. V. Osborn, President	Dayton
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William Lantz, Superintendent of Fisheries	Sandusky

OREGON.

F. C. Reed, President	Clackamas
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R. C. Campbell	Ranier

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Henry C. Ford, President, 524 Walnut Street	Philadelphia
James V. Long, Corresponding Secretary, 75 Fifth Avenue	Pittsburg
H. C. Demuth, Secretary of Board	Lancaster
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RHODE ISLAND.

Henry T. Root, Treasurer	Providence
William P. Morton, Secretary	Johnston
J. M. K. Southwick	Newport

SOUTH CAROLINA.

Hon. A. P. Butler	Columbia
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TENNESSEE.

W. W. McDowell.....	Memphis
H. H. Sneed.....	Chattanooga
Edward D. Hicks.....	Nashville

UTAH.

A. Milton Musser,	Salt Lake City
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VERMONT.

Herbert Brainard.....	St. Albans
F. H. Atherton.....	Waterbury

VIRGINIA.

Dr. J. T. Wilkins.....	Bridgetown
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WEST VIRGINIA.

C. S. White, President.....	Romney
F. J. Baxter, Treasurer.....	Sutton
N. C. Prickett, Secretary.....	Ravenswood

WISCONSIN.

The Governor, <i>ex officio</i> .	
Philo Dunning, President.....	Madison
C. L. Valentine, Secretary and Treasurer	Jamesville
Mark Douglass.....	Melrose
A. V. H. Carpenter.....	Milwaukee
Calvert Spensley.....	Mineral Point
E. S. Miner.....	Sturgeon Bay
James Nevins, Superintendent	Madison

WYOMING.

Louis Miller.....	Laramie
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ANNUAL REPORT

IN RELATION TO THE

Criminal Business of the Courts

OF THE

STATE OF CONNECTICUT,

FOR THE

Year Ending July 1, 1892,

AS SHOWN BY THE RETURNS OF THE STATE ATTORNEYS.

COMPILED BY THE COMPTROLLER.

PRINTED BY ORDER OF THE LEGISLATURE.

HARTFORD :

PRESS OF WILEY, WATERMAN & EATON.

1893.

State of Connecticut.

STATE OF CONNECTICUT,

COMPTROLLER'S OFFICE, HARTFORD, January 23, 1893.

To His Excellency, the Governor :

Complying with the Statute I herewith submit the Annual Report of the State Attorneys, concerning the Criminal Business of the Courts for the year ending July 1st, 1892. The whole number of prosecutions for different crimes was seven hundred and twenty-one, (721), an increase of one hundred (100), as compared with the preceding year. Total number of cases disposed of, seventeen hundred and thirty-four (1734), an increase of five hundred and twenty-two (522). Total number of convictions, one hundred and eighteen (118), an increase of thirty-six (36). The amount of forfeited bonds reported is fifteen thousand five hundred and fifty dollars (\$15,550), the amount for the preceding year was ten thousand and twenty-five dollars.

Respectfully submitted,

NICHOLAS STAUB,

Comptroller.

REPORTS OF THE STATE ATTORNEYS.

STATE OF CONNECTICUT, OFFICE OF STATE'S ATTORNEY FOR HARTFORD COUNTY.

To the Comptroller:

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892.

Total number of cases disposed of during the year,	205
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Of these cases 1 was in court for 10 terms.

27 were in court for 2 terms.

3 were in court for 4 terms.

3 were in court for 3 terms.

171 were in court for 1 term.

Total number of trials during the year,	15
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As to the persons tried, the results were as follows:

Number of convictions,	12
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Number of acquittals,	4
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Number of cases in which there was disagreement of jury,	1
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Number of pleas of guilty,	122
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Bonds forfeited:

Number,	99
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Amount,	\$1.000
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Number of <i>nolles</i> absolute,	72
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Number of <i>nolles</i> upon terms,	8
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Number of original informations,	81
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Appealed cases and their disposition by verdict:

Number,	99
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Number by verdict,	7
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Number of pleas of guilty,	46
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Number of <i>nolles</i> absolute,	40
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Number disposed of upon payment or part payment of fine below and cost,	6
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Whole number of prosecutions for different crimes,	205
Number of second convictions for the same crime,	none.
Number of third convictions for the same crime,	4

ARTHUR F. EGGLESTON,

State's Attorney for Hartford County.

NEW HAVEN COUNTY.

To the Comptroller:

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892:

Total number of cases disposed of during the year,	133
Number of terms they were in court:—1 for 21 terms; 1 for 8 terms; 3 for 5 terms; 1 for 3 terms; 13 for 2 terms; 114 for 1 term.	

Total number of trials and their results:

Number of convictions,	12
Number of acquittals (one of them on the ground of insanity),	10
Number of cases in which there was disagreement of jury,	3
Number of pleas of guilty,	56

Bonds forfeited:

Number,	6
Amount,	\$2,750
Number of <i>nolles</i> absolute,	40
Number of <i>nolles</i> upon terms,	11
Number of original informations,	109

Appealed cases and their disposition by verdict:

Number by verdict,	9
Number of pleas of guilty,	1
Number of <i>nolles</i> absolute,	2
Number disposed of upon payment or part payment of fine below and cost,	none.

Whole number of prosecutions for different crimes,	167
Number of second convictions for the same crime,	1
Number of third convictions for the same crime,	none.

TILTON E. DOOLITTLE,

Attorney to the State for New Haven County.

To the Comptroller :

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892:

Total number of cases disposed of during the year, . . . 217

Number of terms they were in court:—129 for 1 term; 25 for 2 terms; 15 for 3 terms; 17 for 4 terms; 12 for 5 terms; 6 for 6 terms; 2 for 7 terms; 6 for 8 terms; 5 for 12 terms.

Total number of trials and their results:

Number of convictions, 9

1 dismissed upon demurrer.

1 dismissed on plea of jurisdiction.

Number of acquittals, 3

Number of cases in which there was disagreement of jury, 4

Number of pleas of guilty, 16

Bonds forfeited:

Number, 37

Amount, \$800

Number of *nolles* absolute, 94

Number of *nolles* upon terms, 52

34 nolle without costs should have been joined to court below.

10 nolle death of accused.

4 nolle by order of court.

Number of original informations, 47

Appealed cases and their disposition by verdict:

Number by verdict, 4

Number of pleas of guilty, 2

Number of *nolles* absolute, 85

Number disposed of upon payment or part payment of fine

below and cost, 48

Whole number of prosecutions for different crimes, . . . not given.

Number of second convictions for the same crime, . . . not given.

Number of third convictions for the same crime, . . . not given.

Respectfully submitted,

GEORGE E. TERRY,

Assistant State's Attorney for New Haven County, Waterbury Court.

To the Comptroller :

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892 :

Total number of cases disposed of during the year, . . . 336

Number of terms they were in court:—198 for 1 term; 79 for 2 terms; 35 for 3 terms; 11 for 4 terms; 2 for 5 terms; 8 for 8 terms; 1 for 9 terms; 1 for 10 terms; 1 for 12 terms.

Total number of trials and their results:

Number of convictions,	21
Number of acquittals,	19
Number of cases in which there was disagreement of jury,	5
Number of pleas of guilty,	31

Bonds forfeited:

Number,	41
Amount,	\$5,300
Number of <i>nolles</i> absolute,	117
Number of <i>nolles</i> upon terms,	85
Number of original informations,	not given.

Appealed cases and their disposition by verdict:

Number by verdict,	40
Number of pleas of guilty,	31
Number of <i>nolles</i> absolute,	117
Number disposed of upon payment or part payment of fine below and cost,	85
Whole number of prosecutions for different crimes,	not given.
Number of second convictions for the same crime,	not given.
Number third convictions for the same crime,	not given.
Appeals withdrawn,	5
Erased from docket by order of court,	8

GEORGE M. GUNN,

Pros. Atty. Court of Common Pleas for New Haven County.

NEW LONDON COUNTY.

To the Comptroller:

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892—Superior Court:

Total number of cases disposed of during the year,	68
Number of terms they were in court:—1 for 3 terms; 2 for 2 terms; 65 for 1 term.	

Total number of trials and their results:

Number of convictions,	3
Number of acquittals—2 on the ground of insanity, 1 other acquitted.	
Number of cases in which there was disagreement of jury, 1 partly tried—juror sick and case continued.	
Number of pleas of guilty,	22

Bonds forfeited :

Number,	.	.	.	.	.	.	.	2
Amount,	.	.	.	.	.	.	.	\$600
Number of <i>nolles</i> absolute,	.	.	.	.	.	.	.	15
Number of <i>nolles</i> upon terms,	.	.	.	.	.	.	.	7
Number of original informations,	.	.	.	.	.	.	.	40

Whole number of prosecutions for different crimes—11 convictions, 3 erased, 1 indicted for murder; all others disposed of as indicated, except murder case and one other continued.

Number of second convictions for the same crime,	.	.	.	none.
Number of third convictions for the same crime,	.	.	.	none.

SOLOMON LUCAS,

State's Attorney for New London County.

To the Comptroller :

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892.—Criminal Court of Common Pleas, New London County :

Total number of cases disposed of during the year,	.	.	.	108
Number of terms they were in court:—82 for 1 term; 21 for 2 terms; 4 for three terms; 1 for 4 terms.				

Total number of trials and their results :

Number of convictions,	.	.	.	.	.	5
Number of acquittals,	.	.	.	.	.	3
Number of cases in which there was disagreement of jury,						none.
Number of pleas of guilty,	.	.	.	.	.	7

Bonds forfeited :

Number,	.	.	.	.	.	.	.	7
Amount,	.	.	.	.	.	.	.	\$550
Number of <i>nolles</i> absolute,	.	.	.	.	.	.	.	16
Number of <i>nolles</i> upon terms,	.	.	.	.	.	.	.	54
Number of original informations—Settled in court below,	.							9

Appealed cases and their disposition by verdict :

Continued in court,	.	.	.	.	.	.	.	7
Number disposed of upon payment or part payment of fine below and cost,	.	.	.	.	.	.	.	54
Whole number of prosecutions for different crimes,	.	.	.	.	.	.	.	101
Number of second convictions for the same crime,	.	.	.	.	.	.	.	none.
Number of third convictions for the same crime,	.	.	.	.	.	.	.	none.

SOLOMON LUCAS,

State's Attorney for New London County.

NORWICH, July 13, 1892.

FAIRFIELD COUNTY.

To the Comptroller:

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892:

Total number of cases disposed of during the year, . . . 202
 Number of terms they were in court:—157 for 1 term; 21 for 2 terms;
 5 for 3 terms; 6 for 4 terms; 4 for 5 terms; 1 for 6 terms; 1 for 7
 terms; 2 for 8 terms; 1 for 9 terms; 3 for 10 terms; 1 for 11 terms.

Total number of trials and their results:

Number of convictions, 10
 Number of acquittals, 4
 Number of cases in which there was disagreement of jury, . . . 1

Number of pleas of guilty, 84

Bonds forfeited:

Number, 4
 Amount, \$475

Number of *nolles* absolute, 82

Number of *nolles* upon terms, 17

Number of original informations, 1

*Appealed cases and their disposition by verdict:

Number by verdict, not given.

Number of pleas of guilty, not given.

Number of *nolles* absolute, not given.

Number disposed of upon payment or part payment of fine

below and cost, not given.

Whole number of prosecutions for different crimes, . . . not given.

Number of second convictions for the same crime, . . . not given.

Number of third convictions for the same crime, . . . not given.

*No case by appeal comes to this Court.

SAMUEL FESSENDEN,

State's Attorney for Fairfield County.

To the Comptroller:

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892:

Total number of cases disposed of during the year, . . . 189

Number of terms they were in court:—80 for 1 term; 30 for 2 terms; 18 for 3 terms; 9 for 4 terms; 6 for 5 terms; 15 for 6 terms; 5 for 9 terms; 1 for 10 terms; 25 (oyster cases sent down from Superior Court) for 30 terms.

Total number of trials and their results :

Number of convictions,	18
Number of acquittals, .	10
Number of cases in which there was disagreement of jury,	7

Number of pleas of guilty, . 20

Bonds forfeited:

Number,	15
Amount,	\$1,675

Number *nolles* absolute, . 63

(Of these 26 were in old oyster cases brought over from Superior Court and disposed of in this manner by consent of all parties interested.)

Number of *nolles* upon terms, . 57

Number of original informations, . none.

Appealed cases and their disposition by verdict:

(All cases in this Court are appealed cases.)

Whole number of prosecutions for different crimes, . not given.

Number of second convictions for the same crime, . not given.

Number of third convictions for the same crime, . not given.

WM. B. GLOVER,

Pros. Atty. Crim. Court of Common Pleas for Fairfield Co.

WINDHAM COUNTY.

To the Comptroller :

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892:

Total number of cases disposed of during the year, . 47

Number of terms they were in court:—20 for 1 term; 19 for 2 terms; 8 for 3 terms.

Total number of trials and their results :

Number of convictions,	14
Number of acquittals, .	2

Number of cases in which there was disagreement of jury,

Number of pleas of guilty, . 11

Bonds forfeited:

Number,	.	.	.	.	.	.	.	7
Amount,	.	.	.	.	.	.	.	\$1,050

(Forfeited bonds not collected; most of them not collected.)

Number of <i>nolles</i> absolute,	.	.	.	.	.	.	21
Number of <i>nolles</i> upon terms,	.	.	.	.	.	.	4
Number of original informations,	.	.	.	.	.	.	15

Appealed cases and their disposition by verdict:

Number by verdict,	.	.	.	.	.	.	2
Number of pleas of guilty,	.	.	.	.	.	not given.	
Number of <i>nolles</i> absolute,	.	.	.	.	.	.	14
Number disposed of upon payment or part payment of fine below and cost,	.	.	.	.	.	.	9

Whole number of prosecutions for different crimes,	.	not given.
Number of second convictions for the same crime,	.	not given.
Number of third convictions for the same crime,	.	not given.

JOHN J. PENROSE,

State's Attorney for Windham County.

LITCHFIELD COUNTY.

To the Comptroller:

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892:

Total number of cases disposed of during the year,	.	.	118
Number of terms they were in court:—1 for 9 terms; 1 for 6 terms; 8 for 3 terms; 21 for 2 terms; 87 for 1 terms.			

Total number of trials and their results:

Number of convictions,	.	.	.	.	.	3
Number of acquittals,	.	.	.	.	.	none.
Number of cases in which there was disagreement of jury,						none.

Number of pleas of guilty,	19
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Bonds forfeited:

Number,	6
Amount,	\$1,175

Number of <i>nolles</i> absolute,	68
Number of <i>nolles</i> upon terms,	21
Number of original informations,	.	.	.	.	.	.	30

Appealed cases and their disposition by verdict:

Number by verdict,	none.
Number of pleas of guilty,	1
Number of <i>nolles</i> absolute,	21
Number disposed of upon payment or part payment of fine below and cost,	13
Whole number of prosecutions for different crimes,	117
Number of second convictions for the same crime,	not given.
Number of third convictions for the same crime,	not given.

JAS. HUNTINGTON,

State's Attorney for Litchfield County.

WOODBURY, CONN., August 14, 1892.

MIDDLESEX COUNTY.

To the Comptroller :

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892:

Total number of cases disposed of during the year,	87
Number of terms they were in court :—5 for 4 terms; 3 for 3 terms; 11 for 2 terms; 68 for 1 term.	

Total number of trials and their results:

Number of convictions,	7
Number of acquittals,	1
Number of cases in which there was disagreement of jury,	2
Number of pleas of guilty,	28

Bonds forfeited:

Number,	1
Amount,	\$25
Number of <i>nolles</i> absolute,	16
Number of <i>nolles</i> upon terms,	32
Number of original informations,	45

Appealed cases and their disposition by verdict:

Number by verdict,	2
Number of pleas of guilty,	3
Number of <i>nolles</i> absolute,	6
Number disposed of upon payment or part payment of fine below and cost,	21

Whole number of prosecutions for different crimes,	87
Number of second convictions for the same crime,	none.
Number of third convictions for the same crime,	none.
Disagreements,	2

WM. T. ELMER,

State's Attorney for Middlesex County.

TOLLAND COUNTY.

To the Comptroller:

SIR:—Herewith I send you a statement of the business of this office for the year ending July 1st, 1892:

Total number of cases disposed of during the year,	24
Number of terms they were in court:—22 for 1 term; 2 for 2 terms.	

Total number of trials and their results:

Number of convictions,	4
Number of acquittals,	none.
Number of cases in which there was disagreement of jury,	none.

Number of pleas of guilty,	12
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Bonds forfeited:

Number,	1
Amount,	\$150

Number of <i>nolles</i> absolute,	5
Number of <i>nolles</i> upon terms,	2
Number of original informations,	5

Appealed cases and their disposition by verdict:

Number by verdict,	1
Number of pleas of guilty,	none.
Number of <i>nolles</i> absolute,	3
Number disposed of upon payment or part payment of fine below and cost,	none.

Whole number of prosecutions for different crimes:

- 1 damage to public building.
- 2 false pretenses.
- 8 larceny.
- 1 attempt to rape.
- 5 assault and battery.
- 1 vagrancy.
- 3 escape from jail

- 1 non-support of family.
- 1 assault to kill.
- 1 violation of liquor law.

 24

Number of second convictions for the same crime,	.	not given.
Number of third convictions for the same crime,	.	not given.

Respectfully,

BENEZET H. BILL,

State's Attorney for Tolland County.

SUMMARY.

The following is a summary of the statements of the attorneys for the several counties of the State, as shown by the foregoing returns:

Total number of cases disposed of during the year, . . . 1,734
 Number of terms they were in court:—1,193 for one term; 271 for 2 terms; 101 for 3 terms; 52 for 4 terms; 27 for 5 terms; 23 for 6 terms; 3 for 7 terms; 17 for 8 terms; 8 for 9 terms; 6 for 10 terms; 1 for 11 terms; 6 for 12 terms; 1 for 21 terms; 25 for 30 terms.

Total number of trials and their results:

Number of convictions,	118
Number of acquittals,	59
Number of cases in which there was disagreement of jury,	25

Number of pleas of guilty,	428
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Bonds forfeited:

Number,	133
Amount,	\$15,550

Number of <i>nolles</i> absolute,	609
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Number of <i>nolles</i> upon terms,	350
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Number of original informations,	382
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Appealed cases and their disposition by verdict:

Number by verdict,	58
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Number of pleas of guilty,	84
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Number of <i>nolles</i> absolute,	288
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Number disposed of upon payment or part payment of fine below and cost,	236
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Whole number of prosecutions for different crimes,	721
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Number of second convictions for the same crime,	1
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Number of third convictions for the same crime,	4
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STATE OF CONNECTICUT.

REPORT OF THE COMMISSIONERS OF THE STATE TOPOGRAPHICAL SURVEY, JANUARY, 1893.

To his Excellency LUZON B. MORRIS, Governor of Connecticut.

SIR:—The General Assembly of Connecticut at its General Session of 1889 passed the following resolutions :

Resolved by this Assembly :

That the Governor be and he is hereby authorized to appoint a commission, to consist of three citizens of this state, qualified by education and experience in topographical science, to confer with the director or representative of the United States Geological Survey, and to accept its co-operation with this state in the preparation and completion of a contour topographical survey and map of this state, which is hereby authorized to be made, and it is hereby provided that said map shall accurately show all town and county boundary lines in this state as existing at the time of its completion. Said commission shall serve without pay, but all its necessary expenses shall be approved by the comptroller, and paid out of the state treasury. Said commission shall have power to arrange with the director or representative of the United States Geological Survey concerning the survey and map herein provided for, its scale, method of execution, form, and all details of the work, in behalf of this state, and may accept or reject the work presented by the United States Geological Survey. Said commission may expend, in the prosecution of this work, a sum equal to that which shall be expended therein by the United States Geological Survey, but the total cost to this state of said survey shall not exceed the sum of twenty-five thousand dollars.

In pursuance of the above resolution, His Excellency, Morgan G. Bulkeley, Governor, on June 19th, 1889, appointed the following persons Commissioners : William H. Brewer, New Haven ; James H. Chapin, Meriden, and John W. Bacon, Danbury.

After correspondence and conference between the Commissioners and Major J. W. Powell, Director of the United States Geological Survey, and Marcus Baker, Assistant, then in charge of the topographical work in progress in New England, the field work was actively begun July 1st, 1889, and the following agreement was entered into :

Agreement between the Commissioners of the State of Connecticut and the Director of the United States Geological Survey for the Construction of a Topographic Map of Connecticut :

1. The preparation of the map shall be placed under the supervision of the Director of the United States Geological Survey, who shall determine the methods of survey and map construction.

2. The work shall be based upon the triangulation of the U. S. Coast and Geodetic Survey, and wherever this is deficient it shall be supplemented by the U. S. Geological Survey.

3. The survey shall be executed in a manner sufficiently elaborate to prepare a map upon a scale of 1 : 62,500 exhibiting the hydrography, hypsography and public culture, and including all town and county boundary lines in this state as established at the time of its completion, and the preliminary field maps shall be on such a scale as the Director of the U. S. Geological Survey may select to secure accuracy in the construction of the final map.

4. The hypsography shall be shown by contour lines with vertical intervals of 20 feet.

5. The heights of important points, including dams, shall be determined and furnished to the Commissioners of Connecticut.

6. The outlines of wood areas shall be represented upon proofs of the engraved map to be furnished the Commissioners of Connecticut.

7. For convenience the Geological Survey shall, during the progress of the field work, pay the salaries of the persons employed therein, while the traveling, subsistence, and field expenses shall be paid for the same time by the state. For the office work on the map the salaries shall be divided between the two agreeing parties in such a way as to equalize expenses, provided that the total cost to the State of Connecticut of the field and office work, including the electro copper plates mentioned in Section 10 below, shall not be more than twenty-five thousand (\$25,000) dollars, less the necessary expenses of the State Commission.

8. During the progress of the work free access to the field sheets and records of the topographers and draughtsmen shall be afforded the Commissioners for examination and criticism, and should the said Commissioners of the State of Connecticut deem that the work is not being executed in a satisfactory manner, then the said Commissioners may, on formal notice, terminate the agreement.

9. The resulting map shall fully recognize the co-operation of the State of Connecticut.

10. When the work is completed the Commissioners of Connecticut shall be furnished by the U. S. Geological Survey with photographic copies of the manuscript sheets ; and when the engraving is completed said Commissioners shall be furnished by the said survey with electro copper plates of the sheets of the map, without cost to the state in excess of the twenty-five thousand (\$25,000) dollars appropriated by the State, less the necessary expenses of the State Commission.

(Signed)

J. W. POWELL,	<i>Director U. S. G. S.</i>
WM. H. BREWER,	} <i>Commissioners</i> } <i>of the State of</i> } <i>Connecticut.</i>
JAMES H. CHAPIN,	
JOHN W. BACON,	

New Haven, Conn., July 25th, 1889.

After correspondence and conference and after a careful investigation of the whole matter, the Geological Survey later agreed to add to the map, so far as was practicable, the scattered country houses, the Commissioners considering these to be points of spe-

cial interest and value for the topographic identification of localities.

The Geological Survey further agreed to prepare from the same data another map on a smaller scale, of more convenient size, for a wall map.

THE MAPS.

The larger map will consist of atlas sheets about 14 by 18 inches, each covering about 220 square miles of territory. The sheets are drawn irrespective of town or county lines (which are very irregular in this State), each sheet covering a quarter of a degree of latitude and longitude. They conform with those being made by the general government in the other States, and will doubtless ultimately form part of a great atlas of the whole country.

Twenty of these sheets fall entirely within the State and fourteen others, which lie along the borders, overlap into the adjoining States, making thirty-four sheets in all. The scale is about one mile per inch and the sheets are each drawn to fit the adjoining sheets, so that any two or more may be mounted together. All may thus be mounted on a wall map of the whole State, but such a map would be about nine feet long, which is too large for convenient use.

Therefore the preparation of the additional map, on a smaller scale, already alluded to was deemed advisable. This will be on a scale of about two miles to the inch and will be printed in four sheets. It will have all the roads, town lines, etc., but the natural features of elevation will be in less detail, having only the 100-foot contour lines.

There are several ways of portraying elevations and inequalities of surface on maps; by shading or tinting, by *hashures* or lines drawn in the direction of the slope, and by "contour lines" at the various levels. The latter method is considered by all engineers and geographers to be the most useful and is the system now used by the general government. The Commissioners believe that it gives the information more accurately than any other system.

The maps will be printed in three colors; the roads, town lines, all that relates to occupation and the lettering, will be in black; the waters in blue and the contour lines in brown.

TOWN LINES.

The resolution provides that the map "shall show all town and county boundary lines." To aid in attaining this, the following circular (along with a copy of the resolution establishing

the survey, and a postpaid return envelope for the answer), was mailed to the Selectmen of every town in the State in July, 1889.

To the Selectmen of the Town of

MESSRS:—The Act passed by the last Legislature (a copy of which is enclosed), calling for a topographical survey and map of this State, provides that town and county boundary lines be indicated thereon.

This assumes that the aforesaid lines are established and so marked that they can readily be found.

The survey and map will be made by the United States Geological Survey at the joint expense of the State and the United States, and the survey has now actually been commenced.

The representatives of the General Government very properly decline to locate and settle town lines where they are not established by the local authorities. Where there is any unsettled question as to local boundaries, neither the United States Engineers nor the State Commissioners have any authority whatever to settle it, nor have they the authority to designate corners or angles not already properly marked.

Will you please advise us, at your earliest convenience, whether all the boundary lines of your town are so established, in accordance with the provisions of Sections 182, 183 and 184 of the General Statutes of Connecticut, and whether the corners and angles are so marked that they can readily be found by the surveyors.

If not, will you take immediate measures to have the corners and angles so established and marked, *otherwise the lines cannot be put upon the map.*

It is to be understood that the entire line need not be run if all the corners and angles are plainly marked. Where a stream or public highway separates two towns, the points where a boundary leaves the stream or road, needs to be plainly indicated.

WM. H. BREWER,	} <i>Commissioners.</i>
JAMES H. CHAPIN,	
JOHN W. BACON,	

NEW HAVEN, July 15, 1889.

Answers were received from only ninety-nine of the one hundred and sixty-eight towns in the State. The majority of these answers only conveyed the general information that the Selectmen thought that the town lines could be found by the surveyors. There was also considerable information as to when the lines had been perambulated and the monuments examined.

It became evident that the State law, requiring the perambulation of the town lines and examination of the monuments, is only rarely observed. In most cases the lines had not been perambulated for many years, some Selectmen said not for twenty or thirty years, at least. Often the actual boundary was a matter of the personal knowledge of the citizens and certain town officials rather than a line marked by obvious and recognizable

monuments. In one case the boundary between two towns had never been run or even located. The town officials had "for many years talked about it," but had taken no further action. In a number of cases the town officers thought that the government surveyors should look up the law, run the lines and mark and establish them accurately.

The surveyors found so many practical difficulties during the first season's work in locating the town lines, that the following additional circular was mailed in May, 1890 (along with a copy of the resolution and a postpaid return envelope for answer), to the Selectmen of the towns which had not made definite response to the circular of the previous year :

To the Selectmen of the Town of

MESSRS :—The General Assembly of the State, at its last session, passed an Act (a copy of which is enclosed), calling for a Topographical Survey and Map of the State to be made by the U. S. Geological Survey, at the joint expense of the State and United States, under the supervision of a State Commission.

The field work in the western part of the State was done last summer and the drawing of the map of that portion is nearly done. The survey of the eastern part of the State will be made this summer. The surveyors will soon be in the field again and we expect to have the field work finished by the close of this year.

The Act provides that town lines be indicated on the maps. This assumes that the lines are established and marked on the ground in accordance with the General Statutes. Please see *Sections* 182, 183 and 184 of the General Statutes of Connecticut. These statutes require that "every Town and Borough shall procure its bounds to be set out by plain and durable marks and monuments." They also designate the mode and manner in which this shall be done and require that once in every five years the proper authorities shall "perambulate the lines and renew the bounds and monuments," etc.

We find that some towns have not had these lines perambulated and monuments examined for many years, and in many cases it is difficult to find the angles and ascertain accurately where the town boundaries really are.

Where there is any unsettled question as to boundaries, the matter must be settled by the local authorities, for neither the U. S. Surveyors nor this Commission have any authority whatever to settle it, nor have they any authority to assume the location of angles or monuments not properly established.

If the lines of your town have not been perambulated, the monuments renewed where necessary, the angles marked and courses established within the period required by law (five years). will you take immediate measures to have them so established and marked, that they may readily and surely be found by the surveyors.

Whether your town has complied with these sections of the General Statutes of the State or not, it will greatly aid the survey if you will give this Commission, as early as possible, *a transcript from the Rec-*

ords, defining and describing the town boundaries with description of the same at the last perambulation, giving the courses (and whether true or magnetic), and distances, and as full a description as is practicable of the monuments, whether pile of stones, natural stone, artificial monument, stake, tree, or whatever else, also whether a line is along a stream, highway, wall, ditch or other visible mark.

This is desirable because it is found that in some cases, owing to inaccurate surveys in the past, the lines actually agreed upon and legally recognized, do not conform to the legal description, and the surveyors are expected to indicate the lines on the maps as they actually are. We ask therefore that the monuments be plain and also that we have the description of the boundaries as given in the Records.

Where a stream or public highway separates two towns, the point where the boundary line leaves the stream or road should be plainly marked.

It is highly important that the official map of the State have its town boundaries accurately and truthfully indicated upon it, and to this end we anticipate your kind and hearty co-operation.

WM. H. BREWER, New Haven,	} <i>Commissioners.</i>
JAMES H. CHAPIN, Meriden,	
JOHN W. BACON, Danbury,	

NEW HAVEN, May 10, 1890.

No response whatever has been received from the officials of 42 towns of the State to either of these circulars, and from most of the 126 towns that did respond, but little information of use was obtained.

The Commissioners further learned that many towns had no written record of their boundary lines further than that furnished by the Acts creating the towns. Monuments of some kind may have been set, but no written record had been kept regarding them. The monuments, perhaps set by some surveyor now dead, are often obscure or imperfect, and not easily found and recognized by a stranger in the absence of other data.

In some cases where the boundary lines have been actually run and monuments established, the lines thus agreed upon and legally recognized, do not agree with the records. Lines which are described as straight, are not marked straight, and monuments marking angles, are not in the places described and called for.

Under these circumstances, the Surveyors and Commissioners have located the town lines on the maps according to the best data they have and they believe that the lines are essentially correct. They are as correct as it is practicable to make them without a State survey made for the special purpose, of fixing and marking them, as is now being done at a great expense by the neighboring State of Massachusetts.

The field work was practically finished in 1891, photographic copies of the field sheets were furnished the Commissioners as fast as prepared, and they have taken much time and pains to verify the work, make corrections and supply omissions. In this they have been greatly aided by many citizens, local surveyors and engineers.

The Commissioners believe that the maps are in more detail and are more nearly correct than any other maps heretofore prepared in this country at so small an expense.

STATE LINE.

During the summer of 1890 an application was made to the Governor of Connecticut by the State Engineer of New York, under the provisions of the latter State, to unite in an examination of the monuments designating the division line between said States, and in restoring and replacing any such monuments as might be found injured or removed.

In accordance with this application and at the request of the Governor, one of the members of this Commission coöperated with the duly appointed agent of the State of New York in such an examination. The monuments marking the west line of Connecticut were set more than thirty years ago, and while most of them are still in very good condition, some have been thrown out of place by action of the frost and other causes, and need resetting, and a few have been removed, which should be relocated and replaced.

We beg leave to suggest that some statutory provision should be made to meet cases of this kind. While our laws provide for the proper maintenance of the division lines between towns, boroughs and school districts, they are entirely silent in regard to the examination and preservation of the more important boundary lines of the State itself. Authority might be conferred upon the Executive, to appoint in such cases, an agent to act with the duly appointed agent of any adjoining State, and authorize them to restore and replace any boundary monument found to be injured or removed, at the joint expense of the two States interested.

SIZE OF THE STATE.

The area of the state as determined by the survey is 5,004 square miles. Regarding this matter great uncertainty has heretofore prevailed as the following figures show. Among the authorities the following are the more common figures given : 4,674 square miles, *Dwight's* system of geography, 1795 ; *John-*

son's Family Atlas ; *De Bow*, Rep. 7th census ; *Kennedy*, Report of the 8th census ; *Lippincott's Gazetteer*, ed. 1869 and ed. 1885, etc. ;—4,664 sq. m. *Pease & Niles*, Gazetteer of Conn. and R. I., 1819 ;—4,764 sq. m., *Darby & Dwight*, Gazetteer of the U. S., 1833 ;—4,730 sq. m., *New Am. Encyc.* 1869 ;—4,675 sq. m., *Brooks' General Gazetteer*, 1876 ;—4,845 sq. m., *Walker*, Rep. of the 10th census, 1881 ;—4,990 sq. m., *Townsend*, Index to the U. S. 1890 ; *Rand & McNally*, Atlas, etc. ;—5,004, the State Topographical Survey. It will be noticed that these areas vary 340 square miles, or over 7 p. c.

PRESENT CONDITION OF THE WORK.

The maps are now practically finished, the plates are all engraved and the atlas sheets are all printed and in the hands of the Commissioners.

The wall map on four sheets is engraved but not yet printed.

There has been expended up to the present time, as follows :

Paid to the Surveyors of the U. S. G. S.	\$24,103 05
Expenses of the Commissioners to June 30th, 1891..	496 16
Unexpended balance	400 79
<hr/>	
State appropriated	\$25,000 00

It will be perceive that the cost of the survey, to the State, is an average of a little less than five dollars per square mile.

ADDITIONAL LEGISLATION REQUIRED.

The appropriation ceased to be available to the Commissioners June 30th, 1891. Meanwhile their work and expenses continued. It is recommended that the unexpended \$400 be re-appropriated to meet the expenses of the Commissioners, including those incurred since July 1st, 1891.

The State has made no provision for the publication of the maps. It is recommended that an appropriation be made for their publication and for a certain number of copies for the use of the State and for distribution to public libraries and institutions, and that provision be made for placing the maps on sale to the public at as near the cost of publication as is practicable.

Commissioner Chapin died suddenly March 14th, 1892, having rendered efficient service up to that date.

WILLIAM H. BREWER, } Commissioners.
JOHN W. BACON, }



MURRAY & CROSS

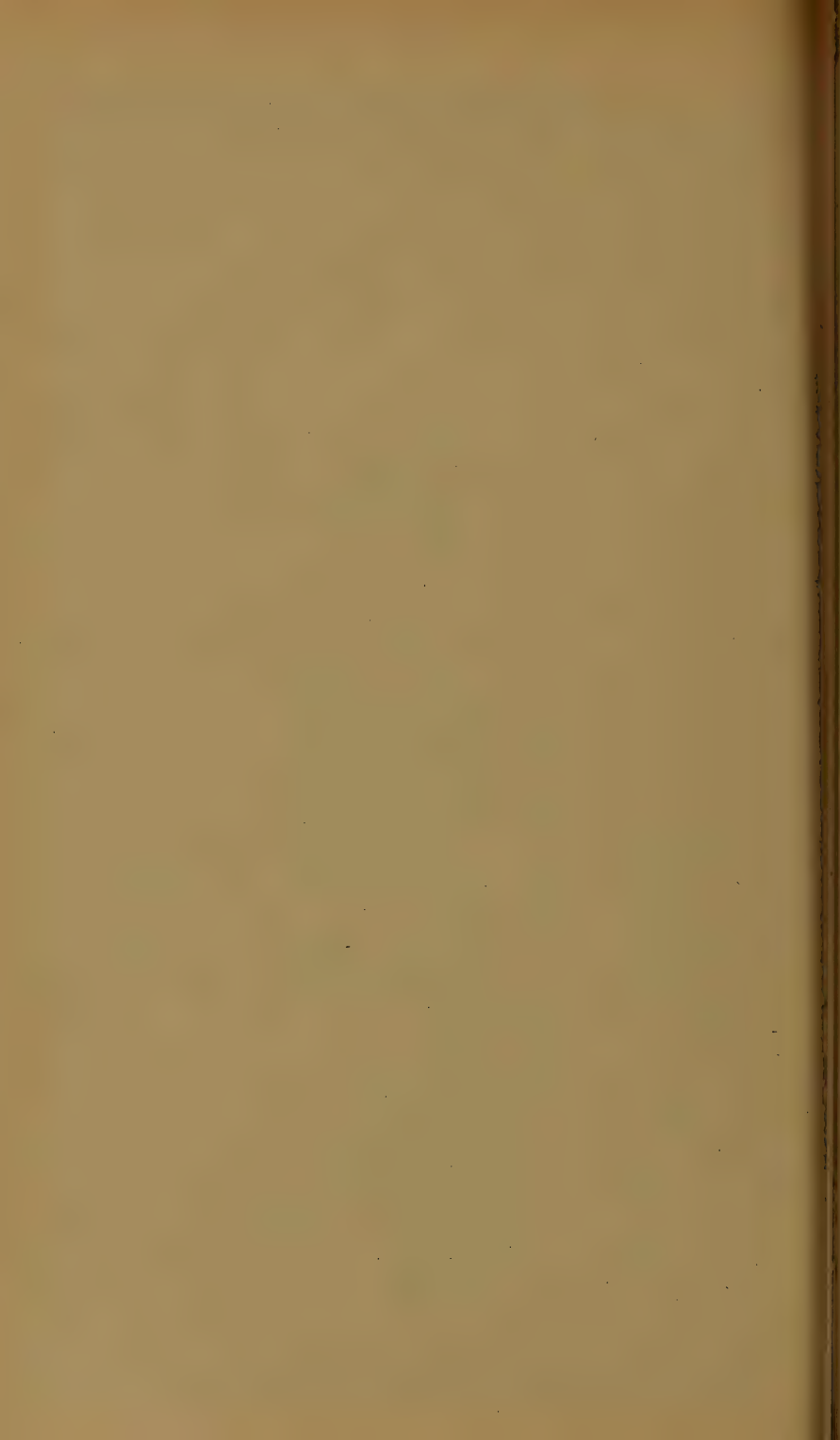
Thirty-Seventh Annual Report
OF THE
EXECUTIVE COMMITTEE
OF THE
HARTFORD HOSPITAL
INCLUDING THE
EIGHTH ANNUAL REPORT
OF
OLD PEOPLE'S HOME,
FIFTEENTH ANNUAL REPORT
OF THE
TRAINING SCHOOL FOR NURSES.

Presented to the Directors at their Annual Meeting, December 21st, 1892.

HARTFORD, CONN.:

PRESS OF THE CASE, LOCKWOOD & BRAINARD COMPANY.

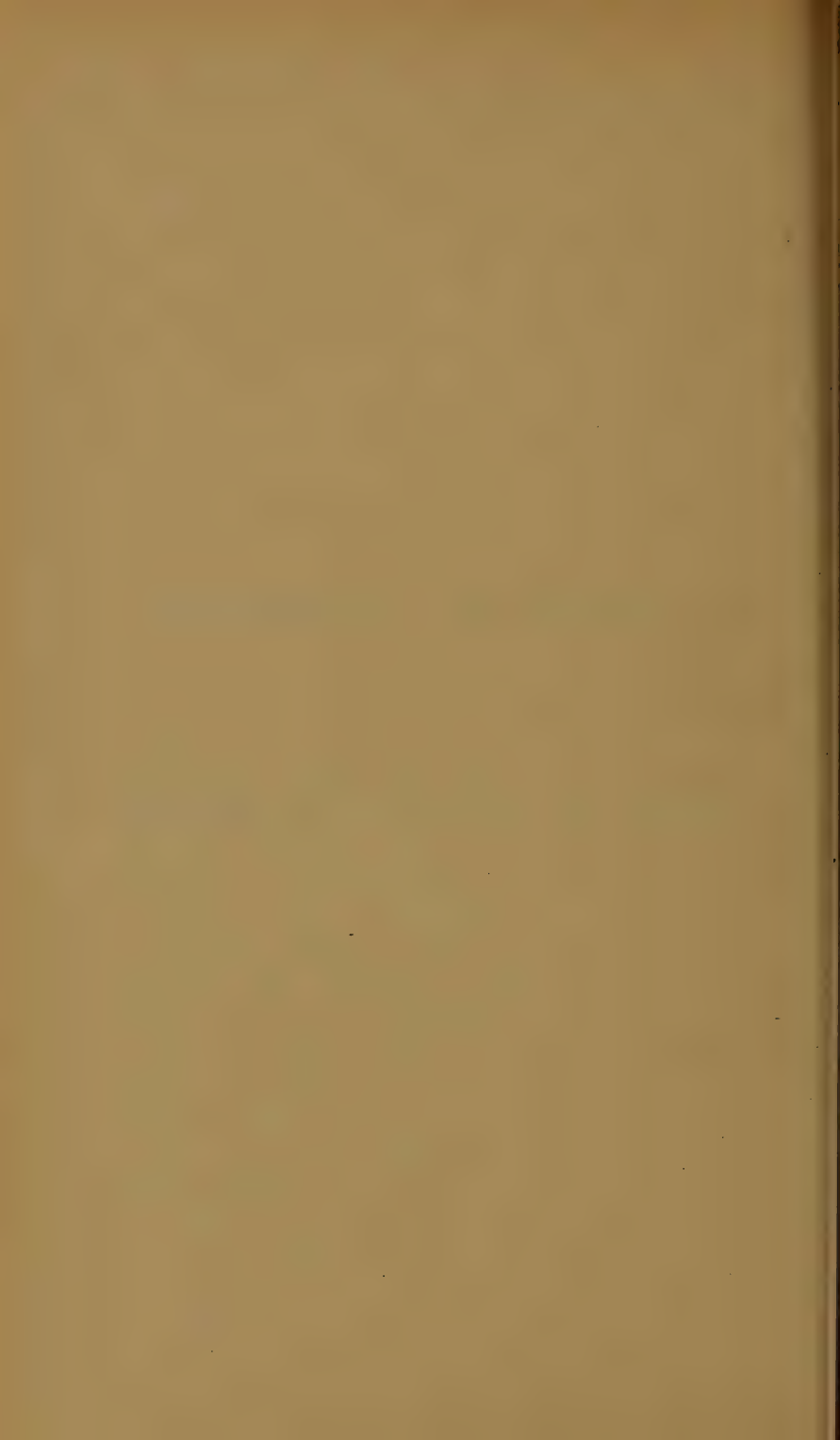
1892.



HARTFORD HOSPITAL

AND

TRAINING SCHOOL FOR NURSES.



OFFICERS OF THE HARTFORD HOSPITAL.

ELECTED AT THE ANNUAL MEETING, DECEMBER 14 AND 15, 1892.

GURDON W. RUSSELL, M.D., *President.*
JONATHAN B. BUNCE, *Vice-President.*
WARD W. JACOBS, *Secretary and Treasurer.*

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HARMON G. HOWE, M.D., 51 Church St.
THOMAS SISSON, 259 Main St.

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JONATHAN B. BUNCE,
THOMAS O. ENDERS,
HENRY A. REDFIELD.

AUDITORS.

JONATHAN B. BUNCE,
THOMAS O. ENDERS.

LIBRARIAN.

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W. A. M. WAINWRIGHT, M.D.,
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 P. H. INGALLS, M.D., *Secretary.*

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 WILLIAM F. TUTTLE,
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 BAILLERSTEIN, M.
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 BLANCHARD, HOMER
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 FITCH, PATTEN
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 GILLETT, RALPH
 GLAZIER, A. J.
 GLEASON & WILLARD.
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 SUGDEN, W. E.
 TALCOTT, C. M.
 TAYLOR, SAMUEL
 WELLES, JAMES G.
 WHITE, W. S.
 WOOLLEY, G. W. & W. P.

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 HASTINGS, P. M., M.D.
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 REDFIELD, H. A.
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 ELMORE, S. E.
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 STORRS, MELANCTHON, M.D.
 CLEMENS, S. L.
 ALLEN, J. M.
 BURR, F. L.
 ROOT, JOHN G.

DAY, ROBERT E.
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 SKINNER, WILLIAM C.
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 BUNCE, EDWARD M.
 WARNER, CHARLES DUDLEY
 NORTHAM, CHARLES H.

SUBSCRIPTIONS TO THE CONTAGIOUS WARD, HARTFORD HOSPITAL.
to Dec. 16, 1892.

Allen, J. M.	\$100.00	Howe, Mrs. D. R.	100.00
Asylum Hill Churches	32.61	Hillyer, Clara E.	200.00
Barney, Laura Dunham	200.00	Hillyer, A. R.	200.00
Boardman, W. F. J.	50.00	Judd, E. D.	100.00
Brainard, Leverett	100.00	Jewell, Charles A.	100.00
Burns, Mrs. D. W.	2.00	Keney, H. & W.	1,000.00
"B. R."	10.00	Loser, F. C.	10.00
Camp, Mrs. Susie H.	200.00	Mather, Roland	1,000.00
Campbell, James, Jr., M.D.	100.00	Munsill, Mary J.	200.00
Carpenter & Bartlett	100.00	Munsill, Gail B.	50.00
Cheney Brothers	1,000.00	Moore, Mrs. George W.	25.00
Clark, Mrs. G. H.	300.00	Northam, Charles H.	100.00
C. T. W.	5.00	Olmsted, Mrs. H. L.	25.00
Dennis, Miss Bertha P.	10.00	Perkins, Mrs. H. A.	100.00
Dimock, Ira	50.00	Pardee, Judge D. W.	500.00
Day, John C.	250.00	Peck, Cornelia C.	500.00
Day, Caroline E.	250.00	Quiggle, Mrs. M. B.	100.00
Davis, Dr. & Mrs. G. P.	500.00	Russell, W. C.	25.00
Dennis, Rodney	100.00	Russell, G. W., M.D.	500.00
Davenport, Rev. John S.	15.00	Russell, Mrs. Dr. G. W.	50.00
Frisbie, L. T.	100.00	Smith, Mrs. Dr. O. C.	10.00
Ferguson, Rev. Henry	500.00	Seymour, Rev. S. O.	5.00
Goodman, Aaron C.	1,000.00	Smith, Thomas M.	100.00
Gemmill, Burnham & Co.	10 00	Shepherd, Mrs. Dr. G. R.	30.00
Greene, Jacob L.	50.00	Smith, James A.	100.00
Goodwin, James J.	1,000.00	Smith, Major T. M.	10.00
Goodwin, Rev. Francis	1,000.00	Smith, Charles B.	100.00
Green, W. A.	5.00	Thomson, J. M.	100.00
Glazier, A. J.	25.00	Welch, A. A.	5.00
Hull, A. E.	20.00	White, J. Hurlbut	25.00
Hall, James P.	100.00	Whiting, Charles C.	100.00
Hills, George F.	100.00	Wainwright, W. A. M., M.D.	25.00
Howe, H. G., M.D.	100.00	Welles, Mrs. John S.	200.00
Hilliard, E. C.	100.00	"W."	25 00
Hyde, Mayor W. W.	100.00	"E. C."	10 00
Hanna, Mrs. E. A.	5.00	"A Friend"	50.00
Hawley, Gen'l Joseph R.	10.00	One who has diphtheria,	15.00
Hoadly, Charles J.	100.00	Interest	43.48
Howard, Mrs. Charles F.	50.00		

EXECUTIVE OFFICERS OF THE HARTFORD HOSPITAL

At the beginning of the fiscal year, October 1, 1892.

EXECUTIVE COMMITTEE.

HENRY K. MORGAN, 108 Farmington Ave.
HARMON G. HOWE, M.D., 51 Church St.
THOMAS SISSON, 259 Main St.

SUPERINTENDENT.

LEANDER HALL.

RESIDENT PHYSICIAN.

ROBERT M. CLARK, M.D.

RESIDENT SURGEON.

G. A. PECK, M.D.

ASSISTANT SURGEON.

GEO. N. BELL, M.D.

MATRON AND LADY SUPERINTENDENT OF TRAINING SCHOOL.

Miss PERSIS M. PLUMER.

ASSISTANT MATRON.

Miss EMMA B. RICHARDS.

APOTHECARY.

HENRY W. FULLER.

TEACHER OF COOKING SCHOOL.

Mrs. ELIZABETH SLUYTER AYRES.

HOUSEKEEPER.

Mrs. M. E. EGGLESTON.

THE THIRTY-SEVENTH ANNUAL REPORT
OF THE
EXECUTIVE COMMITTEE
OF THE
HARTFORD HOSPITAL.

To the Directors:

The Executive Committee have the honor to present you the following as the thirty-seventh annual report of the Hartford Hospital and Training School.

From the Superintendent's report it will be seen that there have been admitted to the Hartford Hospital for treatment, a larger number of patients than ever before in its history; namely, 1,074; total number under treatment was 1,176. The daily average has not been quite as large as in the year 1889-'90, the year of the prevalence of la grippe, although there were admitted seventy-six more patients; and there were under care seventy-three more than during that year. This indicates a more rapid movement of population, for the particulars of which we refer you to the Superintendent's report to the Executive Committee, published herewith. The average of recoveries and improvements is slightly increased from sixty-eight to seventy-two per cent.; and the death-rate is slightly diminished over last year from thirteen to twelve per cent.

The cost per week per patient is slightly diminished over last year from \$8.04 to \$7.82, as is also the general expense account from \$51,002.43 to \$48,627.67, for the particulars of which we refer you to the Superintendent's report. For the condition of the investments, and the present standing of the

permanent fund, the additions to the same, and the amount of income from the same, we refer you to the Treasurer's report, published herewith, the committee cheerfully submitting to a public desire to include this in their annual report. Generally speaking, we are free to say that the Hospital has never more thoroughly proved its usefulness in this community than by its results during the past year.

MEDICAL AND SURGICAL STAFF.

There have been no changes in the Staff of Visiting Physicians and Surgeons. They have continued to perform their duties in a conscientious manner. The number of operations in the Surgical Department has increased somewhat, from three hundred and sixty-five to three hundred and seventy-seven; and includes many of the most difficult in the realm of surgery, such as laparotomy for various objects, one Caesarian section with living child and mother, radical cure for hernia, cleft palate, operations for stone in the bladder, amputations of nearly all varieties, etc. The Gynecological and Lying-in Wards usually have their full complement of patients, and are accomplishing a great amount of good. The Orthopedic Department is filling a great need in this community, caring for many who would be otherwise obliged to go to hospitals in the larger cities had we not the facilities for their care and treatment. An instrument fund is needed in connection with this branch to enable us to assist in the purchase of those expensive braces necessary for the treatment of Potts' disease of the spine, hip and knee-joint diseases. The Children's Ward accommodates many of these little unfortunates. Forty-four children under twelve have been admitted during the last year. In the Medical Department an unusual number of typhoid fever patients have been under care, namely, eighty-four. There is no doubt that they receive better care in the wards of the Hospital than in any ordinary house where skilled nursing is not to be had. In the Eye and Ear Department there have been thirty-four indoor and sixty-eight outdoor patients.

HOUSE STAFF.

Dr. Edwin R. Baldwin completed his full term of eighteen months service in December last, and is now in active practice. Dr. W. H. Venable entered upon the last six months of his term of service on Dec. 1, 1891; March 1, 1892, he accepted a position as interne in the Sloan Maternity Hospital, New York, his position being filled by Dr. George N. Bell, who on June 1st was appointed on the House Staff, and is now serving as Assistant Surgeon. Dr. G. A. Peck was appointed on the House Staff Dec. 1, 1892, and is now House Surgeon. Dr. R. M. Clark, whose time expires December next, is now House Physician.

THE EXECUTIVE DEPARTMENT.

Dr. P. M. Hastings resigned from this department as Supervisor last May after a long period of service on the Executive Committee, and as Supervisor of the Hospital and Old People's Home, and on the Visiting Staff of the Hospital.

The Superintendent, Leander Hall, continues to fill his position with satisfaction to your committee, they believing the Hospital to be managed in a prudent and economical manner.

Miss Flora Macrae and Miss Jessie J. Glenn, respectively as Matron and Assistant Matron, have been in the service of the Hospital two years and four months, ending Oct. 1, 1892, when they sever their connection with the institution. Miss Persis M. Plumer, who comes highly recommended from the Massachusetts General Hospital of Boston, assumes the position of Matron at the close of the fiscal year, Oct. 1, 1892, with Miss Emma B. Richards as her assistant. Miss Richards was a graduate of our own School for Nurses last year.

IMPROVEMENTS.

The building improvements in the Hospital have been numerous. Four wards, namely, Wards Three, Four, Obstetrical, and Gynecological, have been thoroughly overhauled,

—floors redressed, and where necessary relaid, walls and woodwork painted, new fixtures, etc. At this writing, Ward Five and the North Ward are undergoing the same treatment. Next summer we hope to treat Ward One and the private rooms in the annex in the same manner. The fence surrounding the Hospital block has been repainted. According to your instructions, the two cottages for contagious diseases were fitted for occupancy, and a room built on each one for nurses. The cottages are not in any sense sufficient to accommodate contagious diseases, but are only a makeshift until such time as a new building is erected.

The committee would again call your attention to the need of a new operating-room, with anæsthetic, accident, and recovery rooms annexed thereto. No new hospital of any size is erected without such an arrangement for the care and treatment of surgical cases. All the older city hospitals are being thus equipped. A glance at the surgical work of the Hospital will show the necessity of such an arrangement here. The surgeons are indefatigable and conscientious in the discharge of their duties, without remuneration, and should be aided therein as far as the Hospital is able to do so.

A still wider field is open to development in the treatment of contagious diseases. Our capacity for that purpose is only six or eight beds in two apartments. By plans drawn and accepted for a new contagious ward, that capacity would be increased to nineteen beds in seven different rooms, each accommodating from one to four patients, with necessary apartments for male and female nurses, besides disinfecting boilers, physicians' dressing-room, etc. The actual cost of the building completed and furnished will be \$25,000, which is not a large sum for one of the size desired. There is no doubt in the minds of the committee that such a building is now needed by the city, for not only the individual purpose of caring for the sick, but for the general purpose of averting the spread of disease by its isolation.

Pledges to the amount of several thousand dollars have

been secured for this purpose, and we soon hope to build without encroaching upon the permanent fund.

Religious services have been conducted during the year by representatives from the South Baptist Church and Trinity College, for which the thanks of the committee are due.

To the permanent fund has been added five thousand dollars from Cheney Brothers of South Manchester, for the endowment of a free bed. By the will of the late Mrs. Mary E. Beresford, the Hospital has received two hundred dollars for the erection of a memorial window in commemoration of her husband, the late Dr. Samuel B. Beresford, who was a warm friend of the institution. His children have added largely to this fund, and are now erecting a handsome and expensive window, which will be in place in a few days. From the "June Bug" Circle the sum of ninety dollars is received, being the product of a fair held by these young ladies, the oldest of whom is but twelve years of age. This sum is devoted to the Children's Ward, by request, to be expended in instruments and furnishings. For donations and other gifts, attention is called to the Superintendent's report.

THE TRAINING SCHOOL FOR NURSES.

The Training School enters upon its sixteenth year with a good record of the past and a bright outlook for the future. There have been graduated during the past year the following nurses:

Miss Annie E. Palmer,	Miss Jessie M. Randall,
" Mary A. Rogers,	" Mary J. Harrison,
" Minnie I. Bacon,	" Hattie Allen,
" Mary L. Marsh,	" Lois S. Peck,
" Mary A. Farnsworth,	" Ella J. French.

The accommodations for the twenty-eight pupil nurses are entirely inadequate for this number.

The day is not far distant when a Nurses' Home will be a necessity in connection with the Hospital and upon the Hospital grounds.

The rooms now taken up by the nurses are sadly needed for domestics, the accommodations for whom remain the same as when the Hospital consisted of but four wards.

The nurses sent out during the past year have given good satisfaction. The graduates of this School number many who are filling places of trust in similar institutions. The quality of training is each year improving.

Mrs. Elizabeth Sluyter Ayers has given the Diet Cooking instruction since last May with entire satisfaction to the Executive Committee.

The members of the Visiting Staff have been punctual and thorough in their lectures before the School during the last year, the list for the following year being especially full and complete, both of which are appended to this report. Also a full list of graduates from the School, with instructions for applying for admission to the School, requirements, etc.

WILDWOOD FARM.

The generous gift by the late David Clark to the Hospital and Old People's Home still proves a blessing in many ways. It has been the aim of the committee to increase the milk supply from this source as much as possible. There have been various minor improvements established during the last year.

Respectfully,

HENRY K. MORGAN,	} <i>Executive</i>
HARMON G. HOWE,	
THOMAS SISSON,	

Committee.

NOTE—At the annual meeting of the directors, at which this report was read on December 15, 1892, the subject of the financial condition of the Hospital was discussed at length, the important fact in the matter being that the Hospital cannot continue to do as efficient work as in the past without a further increase in its endowment. The Hospital, in its vari-

ous departments, expended last year out of its principal, for ordinary running expenses and necessary internal repairs, the sum of \$8,589.47.

The Old People's Home department of the Hospital needs \$175,000, to make it self-supporting. The Hospital itself needs an addition of \$200,000 to place its various departments upon a safer-working basis. This great necessity is one of growth in usefulness, namely, caring for more people, doing better service, extending the surgical and contagious disease service, and increasing the efficiency of the training school. If we are to sustain the reputation and standing which the Hospital has to-day, we must not encroach upon the funds, but they *must* be largely increased, by kind remembrance of the past and future friends of this institution, by will, or subscription.

We do not wish to give less care to the patients or raise the price of admission to either the Hospital or Old People's Home, but to carry out in full the design of their construction, to make and keep them as two of the most noble charities of our State, worthy of aid from all.

TREASURER'S REPORT TO THE

CLOSE OF FISCAL YEAR,

RECEIPTS.

Balance cash from 1891 report,		\$11,423.23	
Fund, gift of Cheney Brothers for free bed,		5,000.00	
Bequest of Mary S. Beresford for memorial window,		200.00	
Interest, net,		17,192.00	
Bills rec. real,		1,750.00	
“ “ Ellen M. Watkinson fund,		1,125.00	
Rents, Congress Street property, gross,	\$739.64		
Wooster “ “ net,	168.67	908.31	
Old People's Home, one-half salary of supervisor,		291.66	
L. Hall, Supt., received from him for			
State appropriation,	\$5,000.00		
Various towns in the State,	12,803.46		
Paying patients,	10,871.44		
State, for care of soldiers,	255.44		
U. S. Collector, for seamen,	96.00		
Services of nurses,	1,152.40		
Sales,	29.83		
Registrar of births and deaths,	48.25		
Donation,	80.00	30,336.82	
Ellen M. Watkinson fund, net income,		278.82	
Old People's Home, loans paid in full,		6,000.00	

\$74,505.84

DIRECTORS OF HARTFORD HOSPITAL.

ENDING SEPT. 30, 1892.

DISBURSEMENTS.

Paid executive committee's orders for			
General expenses at hospital,	.	.	\$48,627.67
Temporary contagious ward,	.	.	925.90
Infectious ward (new),	.	.	256.00
Insurance stocks, one-third share Travelers Ins. Co.,	\$33.33		
Premium on same,	88.67	72.00	
Railroad bonds, subscription for one, Chicago,			
Burlington & Quincy R. R., Convertible 5s of Sept., 1903,	1,000.00		
New York & New England R. R., two first mortgage 7s of January, 1905,	2,000.00		
Premium on same,	370.00	3,370.00	
Manufacturing stocks, 2 old shares Collins Co.,			
bought of company at 9.20,	18.40		
28 shares Hartford Carpet Co., bought of Old People's Home at par,	2,800.00	2,818.40	
Express stocks, 9 shares Adams Express Co.,			
bought of Old People's Home,	900.00		
Premium on same,	423.00	1,323.00	
P. M. Hastings, M.D., supervisor, salary 7 months to May 1, 1892,			
		583.33	
Loans to Old People's Home,			
		4,600.00	
Wooster Street property, tax, list 1891,			
		43.03	
Congress " " " "			
	110.29		
Repairs, etc.,			
	161.81	272.10	
Ellen M. Watkinson fund income, paid Miss Charlotte M. Ely for Miss Susan Buck,			
		200.00	
Bills rec. real, Ellen M. Watkinson fund,			
		400.00	
Office expense account,			
		53.04	
Salary of Treasurer, one year, to Sept. 30, 1892,			
		600.00	
Balance cash,			
		10,361.37	
			<u>\$74,505.84</u>

TREASURER'S REPORT—CONTINUED.

CLOSE OF FISCAL YEAR, ENDING SEPT. 30, 1892.

*ASSETS.**Bank Stocks.*

Shares.			Book Value.	Market Value.
50	Ætna	National, Hartford,	\$5,000.00	\$6 250.00
200	American	" "	10,000.00	14,000.00
18	Charter Oak	" "	1,800.00	1,890.00
22	Hartford	" "	2,200.00	3,410.00
200	National Exchange	" "	10,000.00	12,600.00
100	Mercantile National,	" "	10,000.00	8,300.00
20	Phoenix	" "	2,000.00	2,500.00
50	Merchants	New Haven,	2,500.00	2,350.00
25	Second	" "	2,500.00	4,175.00
80	First	Norwich,	8,000.00	8,000.00
50	Thames	" "	5,000.00	7,500.00

Insurance Stocks.

37	Ætna,	Hartford,	3,700.00	9,630.00
46	Connecticut Fire,	" "	4,600.00	5,612.00
11	Hartford	" "	1,100.00	3,740.00
25	Orient,	" "	2,500.00	2,300.00
12	Travelers,	" "	1,200.00	2,460.00

Railroad Stocks.

40	New London Northern,		4,000.00	6 800.00
37	New York, New Haven & Hartford,		3,700.00	8,880.00
100	Chicago, Burlington & Quincy,		10,000.00	10,100.00
100	Erie & Pittsburgh,		5,000.00	6,000.00
100	Ft. Wayne & Jackson,		10,000.00	11,000.00
100	Kansas City, St. Louis & Chicago,		10,000.00	12,500.00
40	Pittsburgh, Ft. Wayne & Chicago,		4,000.00	6,120.00

Miscellaneous Stocks.

236	Broad Brook Co.,		5,900.00	5,900.00
5	Collins Co.,		500.00	487 50
60	Gatling Gun Co. (par 6,000),		1.00	1 00
28	Hartford Carpet Co.,		2,800.00	2,576.00
46	Hartford City Gas Light Co.,		1,150.00	1,380 00
10	New Britain Gas Light Co.,		250.00	250.00
9	Adams Express Co.,		900.00	1,341.00
32	Spring Grove Cemetery Association, com-			
	mon (par 800),		1.00	1 00

<i>Bonds.</i>		Book Val.	Market Val.
State of North Carolina, 4s, July, 1910,		\$1,650.00	\$1,633.50
City of Omaha, 5s, Sept., 1907,		10,000.00	10,500.00
Chi., Burl. & Quincy R. R., 5s, Sept., 1903,		2,000.00	2,100.00
Kan. Cy., St. Jo. & C. Bluffs, 7s, Jan., 1907,		15,000.00	18,300.00
Chi. Mil. & St. Paul Ry.:			
(S. W. Div'n), 6s, July, 1909,		15,000 00	17,100.00
(So. Minn. Div'n), 6s, July, 1910,		5,000.00	5,750.00
(Minn. Central), 7s, July, 1894,		2,000.00	2,060.00
Chicago & Northwestern Ry.:			
(Milwaukee & Madison), 6s, Sept., 1905,		10,000.00	11,200.00
Detroit, Lans'g & No. R. R., 7s, Jan., 1907,		10,000.00	1,500.000
Detroit, Monroe & Toledo R. R.: (Lake Shore),			
7s, Aug., 1906,		10,000.00	12,500.00
Joliet & No. Indiana R. R.: (Mich. Central),			
7s, July, 1907,		3,000.00	3,750.00
New York & New England R. R., 7s, Jan., 1905,		16,000.00	19,280.00
N. Y. C. & Hudson River R. R., 5s, May, 1893,		5,000.00	5,100.00
Long Dock Co. (Erie), 7s, June, 1893,		5,000.00	5,175.00

Real Estate.

Hospital buildings and grounds,	1.00	1.00
Original Old People's Home lot,	1.00	1.00
Superintendent's residence,	1.00	1.00
One-half interest in Wildwood farm,	1.00	1.00
Double house 21 and 23 Congress Street,	6,600 00	6,600.00
One half interest 51 and 51½ Wooster Street,	2,500.00	2,500.00
West Virginia land,	1.00	1.00
Bills receivable, real,	34,050.00	34,050.00
" " " Ellen M. Watkinson fund,	5,625.00	5,625.00
Infectious ward account,	256.00	256.00
Cash,	10,361.37	10,361.37
	<u>\$299,349.37</u>	<u>\$352,399.37</u>

LIABILITIES.

Fund,		\$215,036.70
George Hall fund,		31,020.00
Harriet Hall "		18,800.00
Daniel P. Crosby "		5,000.00
Charles H. Northam "		5,000.00
Henry I. Wright "		10,000.00
Miles A. Tuttle " free bed,		1,000.00
Daniel Goodwin " "		2,000 00
Cheney Brothers " "		5,000.00
Mary S. Beresford " "		200.00
Ellen M. Watkinson trust fund,		6,000.00
Ellen M. Watkinson fund, income account,		292.67
		<u>\$299,349.37</u>

TABLE OF INJURIES, DISEASES, ETC., TREATED IN THE HARTFORD HOSPITAL,

During the Year Ending September 30, 1892.

MEDICAL CASES.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remain'g under treatment.
<i>General Diseases.</i>							
Alcoholism, Acute,	9	2	11	..	..	..	..
Chronic, . . . . .	..	2	..	2	..	..	..
Debility, Alcoholic,	1	..	1	..	..	..	..
General, . . . . .	..	2	2	..	..	..	..
Senile,	6	6	1	2	3	6	..
Fever, Ephemeral,	2	..	2	..	..	..	..
Thermic,	4	..	2	..	..	2	..
Mania á Potu, . . . . .	..	1	..	1	..	..	..
Peritonitis, Chronic (Effusion), . . . . .	..	4	..	3	..	1	..
Rheumatism, Acute Articular,	23	2	17	8	1	..	1
Subacute,	5	2	2	3	1	..	1
Chronic,	8	4	..	9	..	..	3
Muscular,	7	2	4	3	1	..	1
Rheumatoid Arthritis,	2	1	..	1	..	1	1
<i>Acute Infectious Diseases.</i>							
Erysipelas, Facial,	7	1	7	..	..	1	..
Diphtheria,	9	13	19	..	..	3	..
Fever, Malarial,	3	1	4	..	..	..	..
Scarlet,	1	3	4	..	..	..	..
Typhoid,	50	34	64	1	..	9	10
Typhoid and Diphtheria, . . . . .	..	1	..	..	..	..	1
Typhoid and Pneumonia,	1	3	..	..	..	3	1
Influenza,	13	11	17	6	..	..	1
Parotitis, . . . . .	..	1	1	..	..	..	..
<i>Diseases of the Circulatory System.</i>							
Anæmia, Simple, . . . . .	..	3	3	..	..	..	..
Epistaxis,	1	..	1	..	..	..	..
Heart, Dilatation of, . . . . .	..	1	..	..	..	..	1
Valvular Disease of,	6	1	..	4	..	2	1
Aortic Stenosis,	1	..	..	1	..	..	..

MEDICAL CASES. — CONTINUED.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remain'g under treatment.
<i>Diseases of the Circulatory System. — Con'd.</i>							
Heart, Mitral Regurgitation, . . .	6	2	..	4	1	3	..
Mitral Stenosis, . . .	2	..	..	2	..	..	..
Mitral Stenosis and Regurgitation, . . .	1	..	..	1	..	..	..
Hemorrhage, Cerebral, . . .	8	6	..	4	1	5	4
<i>Diseases of the Digestive System.</i>							
Cholera Infantum, . . .	1	..	1	..	..	..	..
Morbus, . . .	3	..	3	..	..	..	..
Constipation, . . .	1	..	1	..	..	..	..
Diarrhoea, Chronic, . . .	1	..	..	1	..	..	..
Dysentery, Acute, . . .	1	1	1	..	..	1	..
Dyspepsia, . . .	1	3	2	..	1	..	1
Enterocolitis, . . .	3	1	3	1	..	..	..
Fæcal Impaction, . . .	1	..	1	..	..	..	..
Gastric Ulcer, . . .	1	1	1	1	..	..	..
Gastritis, Alcoholic, . . .	2	2	3	1	..	..	..
Chronic, . . .	2	1	..	2	..	1	..
Subacute, . . .	4	4	7	1	..	..	..
Gastro-Enteritis, . . .	1	..	1	..	..	..	..
Jaundice, Catarrhal, . . .	1	2	3	..	..	..	..
Obstructive, . . .	1	..	..	1	..	..	..
Liver, Cancer of, . . .	1	..	..	..	..	1	..
Cirrhosis of, . . .	7	1	..	2	1	5	..
Malnutrition, . . .	1	..	..	1	..	..	..
Obstruction of Bowel, . . .	..	1	..	..	..	..	1
Poisoning, Aconite, . . .	1	..	1	..	..	..	..
Arsenic, . . .	..	1	1	..	..	..	..
Tonsillitis, Acute, . . .	1	1	2	..	..	..	..
Follicular, . . .	3	2	5	..	..	..	..
Suppurative, . . .	2	..	2	..	..	..	..
<i>Diseases of the Nervous System.</i>							
Cerebral Softening, . . .	2	..	..	..	1	1	..
Chorea, . . .	..	1	1	..	..	..	..
Epilepsy, . . .	5	..	..	2	1	2	..
Gumma of Brain, . . .	1	..	..	..	..	1	..
Hypochondriasis, . . .	2	1	1	..	2	..	..
Hysteria, . . .	1	1	..	2	..	..	..
Insanity, . . .	3	2	..	1	3	..	1
Melancholia, . . .	2	2	..	1	3	..	..
Meningitis, . . .	1	..	..	..	..	1	..
and Pneumonia, . . .	1	..	..	..	..	1	..
Myelitis, Chronic, . . .	..	1	..	..	1	..	..
Neuralgia, Sciatic, . . .	2	1	1	2	..	..	..
Neurasthenia, . . .	..	2	2	..	..	..	..
Neuritis, Peripheral, . . .	..	2	..	1	..	..	1
Paralysis, Diphtheritic, . . .	1	..	..	1	..	..	..
Paresis, Alcoholic, . . .	..	1	..	..	1	..	..
Sclerosis, Spinal, . . .	..	2	..	..	1	1	..

MEDICAL CASES. — CONTINUED.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remain'g under treatment.
<i>Diseases of the Respiratory Organs.</i>							
Bronchitis, Acute,	8	2	7	2	..	1	..
Subacute,	2	1	2	1	..	..	..
Chronic,	3	2	1	4	..	..	..
Capillary,	1	1	..	..	..	2	..
Emphysema,	1	..	..	1	..	..	..
Empyema,	4	..	1	..	..	1	2
Laryngitis, Acute,	1	..	1	..	..	..	..
Phthisis,	26	11	..	12	5	13	7
Fibroid,	3	..	..	2	..	..	1
Pleuritis, Subacute,	2	..	..	2	..	..	..
with Effusion,	6	3	2	5	..	1	1
Pneumonitis, Catarrhal,	3	1	2	1	..	1	..
Double, . . . . .	..	1	..	..	..	..	1
Lobar,	28	7	18	..	..	17	..
Unresolved,	1	1	1	..	1	..	..
and Peritonitis,	1	..	..	..	..	1	..
<i>Diseases of the Urinary Organs.</i>							
Nephritis, Acute,	2	1	1	1	..	1	..
Chronic Interstitial,	3	2	..	2	..	1	2
Chronic Parenchymatous,	7	8	..	3	..	10	2
<i>Unclassified.</i>							
Attempt Suicide (Drowning),	1	1	..	..	..	..	..
Exposure,	1	..	1	..	..	..	..
Malingeringer, . . . . .	..	2	..	..	2	..	..
No Disease,	1	3	..	..	3	..	1
Totals,	340	194	243	110	34	100	47

ROBERT M. CLARK, M.D.,
House Physician.

GYNÆCOLOGICAL AND OBSTETRIC CASES.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remaining un- der treatment.
<i>Gynæcological.</i>							
Amenorrhœa,	1	1	..	..	..	..
Cervix Uteri, Laceration of,	6	4	1	1	..	..
Stenosis and Anteversion,	1	1	..	..	..	..
Stenosis and Endometritis,	1	1	..	..	..	1
Perineum, Laceration of,	10	9	..	..	..	1
Dysmenorrhœa,	1	..	1	..	..	..
Endometritis, Chronic,	3	..	2	1	..	..
Fungus,	2	..	..	..	..	2
Subacute,	3	2	..	..	..	1
Lateroversion,	2	1	1	..	..	..
Menorrhagia,	1	..	1	..	..	..
Metritis, Chronic,	2	1	1	..	..	..
Ovarian Cyst,	3	..	..	1	1	1
(Ruptured),	1	..	..	..	1	..
Ovary, Prolapse of,	2	1	1	..	..	..
Pelvic Cellulitis, Chronic,	7	..	7	..	..	..
Pelvic Peritonitis,	2	..	2	..	..	..
Perineum, Lacerated,	2	1	..	1	..	..
Procidentia and Diabetes,	1	..	..	1	..	..
Prolapsus Uteri,	3	1	2	..	..	..
Recto-vaginal Fistula,	1	..	1	..	..	..
Retained secundines,	1	1	..	..	..	..
Retroversion,	3	1	2	..	..	..
Salpingitis,	2	..	2	..	..	..
Tumors, Carcinoma of Vagina,	2	..	..	1	1	..
Uterine Fibroid,	3	..	1	1	..	1
Urethral Caruncle,	2	..	2	..	..	..
Vaginismus and Uterine Polypus,	1	1	..	..	..	..
<i>Obstetric.</i>							
Pregnancy,	37	24	..	*9	1	3
Contracted Pelvis (Caesarian Section),	1	1	..	..	..	..
Puerperium,	2	2	..	..	..	..
Septicæmia,	2	..	..	..	..	2
Infants — Full term,	22	7	23	..	..	†5	1
Premature,	1	..	..	..	1	..
Totals,	22	119	76	27	16	10	12

* Left before confinement.

† Three stillborn ; one hare lip and cleft palate, one diphtheria.

ROBERT M. CLARK, M.D.,

House Physician.

SURGICAL CASES.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remaining under treatment.
<i>Injuries of Head, Face, and Neck.</i>							
Burn of Face,	1	..	1	..	..	..	..
Burns of Face, Trunk, and Limbs, . .	..	1	..	..	..	1	..
Concussion of Brain,	1	1	1	1	..	..	..
Contusion of Face,	3	..	..	3	..	..	..
“ “ and Chest, . . . . .	..	1	1	..	..	..	..
Contusion of Head and Scalp Wound, .	1	..	1	..	..	..	..
Fracture of Inferior Maxilla,	1	..	1	..	..	..	..
Fracture of Orbit,	2	..	1	1	..	..	..
Fracture of Skull, Base,	6	..	..	..	..	6	..
Fracture of Skull and Lacerated Scalp Wound, .	2	..	..	..	..	2	..
Fracture of Skull, Vertex,	1	..	1	..	..	..	..
Fracture, Compound Depressed of Frontal Bone,	1	..	..	1	..	..	..
Fracture, Compound Depressed of Skull, .	1	..	1	..	..	..	..
Fracture, Depressed of Skull and Bruises of Body,	1	..	..	..	..	1	..
Rupture of Larynx,	1	..	1	..	..	..	..
Sprain of Neck, old,	1	..	..	..	..	..	1
Wound, Incised of Face,	1	..	..	1	..	..	..
Wound, Incised of Neck,	2	..	2	..	..	..	..
Wound, Incised of Throat,	3	..	2	..	..	1	..
Wound, Lacerated of Chin and Contusion of Face, . . . . .	..	1	1	..	..	..	..
Wound, Lacerated of Face,	1	1	2	..	..	..	..
Wound, Lacerated of Face and Contusions of Body,	1	..	1	..	..	..	..
Wound, Lacerated of Lip,	1	..	1	..	..	..	..
Wound, Lacerated of Scalp,	2	..	2	..	..	..	..
Wound, Lacerated of Scalp with Concussion,	1	..	1	..	..	..	..
<i>Injuries of Genito-Urinary Organs.</i>							
Contusion of testicles,	1	..	..	..	..	..	1
<i>Injuries of Lower Extremity and Groin.</i>							
Amputation, traumatic of Leg,	2	..	1	..	..	1	..
Amputation, traumatic of Legs and Shock,	1	..	..	..	..	1	..
Burns of Legs and Arms,	1	..	1	..	..	..	..
Contusion of Leg,	4	1	5	..	..	..	..
Contusion of Thigh and Body,	1	..	..	1	..	..	..
Crush of Foot,	4	..	2	..	..	..	2
“ of Heel,	1	..	1	..	..	..	..
“ of Leg,	2	..	2	..	..	..	..
“ “ and Contusion of Thigh,	1	..	1	..	..	..	..
“ of Legs,	1	..	..	..	..	..	1
“ of Thigh,	1	..	..	..	..	1	..

SURGICAL CASES.—CONTINUED.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remaining under treatment.
<i>Injuries of Lower Extremity and Groin—Continued.</i>							
Crush of Thigh, and Lacerated Wounds of Legs,	1	..	..	..	..	1	..
Dislocation of Ankle,	1	..	1	..	..	..	..
of Hip,	1	..	1	..	..	..	..
" and Colles' Fracture,	1	..	..	1	..	..	..
Fracture of Astragalus,	1	..	1	..	..	..	..
Femur, Neck,	3	3	3	1	..	1	1
Fracture of Femur, Neck, with Olecranon and Colles',	1	..	..	..	..	1	..
Fracture of Femur, Shaft,	10	2	9	1	..	..	2
Patella and Synovitis of knee	1	..	1	..	..	..	..
Pelvis,	3	..	2	..	..	1	..
Tibia,	5	..	2	2	..	..	1
" Internal Malleolus,	1	..	1	..	..	..	..
Fracture of Tibia and Compound Fracture of Metacarpal,	1	..	1	..	..	..	..
Fracture of Tibia and Fibula,	5	..	5	..	..	..	..
" " and Femur,	1	..	1	..	..	..	..
Fracture, Compound of Femur, Shaft, of Metatarsal,	2	..	..	1	..	..	1
Tibia and Fibula,	1	..	1	..	..	..	..
" " and Femur,	3	..	1	..	1	..	1
Fracture, Compound Comminuted of Femur, Shaft,	1	..	..	..	1	..	..
Fracture, Compound Comminuted of Tibia and Fibula,	2	..	2	..	..	..	..
Frost-bite of Feet and Fingers,	1	..	1	..	..	..	..
Sprain of Ankle,	9	..	6	2	1	..	..
" and Incised Wound of Scalp,	1	..	1	..	..	..	..
Wound, Gunshot, of Leg,	1	..	1	..	..	..	..
of Thigh,	1	..	1	..	..	..	..
Wound, Incised, of Foot,	3	..	2	1	..	..	..
of Leg,	1	..	..	1	..	..	..
Wound, Incised, of Leg, with Infection of Knee Joint,	1	..	..	..	..	1	..
Wound, Lacerated, of Perineum,	1	..	..	1	..	..	..
of Thigh,	1	..	1	..	..	..	..
<i>Injuries of Thorax, Breast, and Abdomen.</i>							
Burns of Trunk and Limbs, . . . .	..	1	1	..	..	..	..
Contusions of Body, . . . .	..	1	..	..	1	..	..
and Shock from explosion,	2	..	2	..	..	..	..
Contusions of Body and Shock from Fall	1	..	1	..	..	..	..
Contusions of Chest,	1	..	1	..	..	..	..
Fracture of Ribs,	3	1	2	1	..	*1	..

*Internal injuries.

SURGICAL CASES.—CONTINUED.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remaining under treatment.
<i>Injuries of Thorax, Breast, and Abdomen.—Continued.</i>							
Fracture of Ribs, and Traumatic Pneumonia,	2	..	1	..	..	..	1
Wound, Gunshot of Chest,	1	..	1	..	..	..	..
Wound, Incised of Abdomen,	1	..	1	..	..	..	..
<i>Injuries of Upper Extremity, Axilla, and Spinal Column.</i>							
Burns of Arm,	1	..	1	..	..	..	..
of Back and Buttocks, . . . . .	..	1	1	..	..	..	..
of Chest, Neck, and Arms, . . . . .	..	1	..	..	..	1	..
of Shoulders,	1	..	..	1	..	..	..
Concussion of Spine,	3	1	1	2	..	1	..
Contusion of Back,	2	..	2	..	..	..	..
and Buttocks,	1	..	1	..	..	..	..
Crush of Arm,	2	..	..	2	..	..	..
and Internal Injuries,	1	..	..	..	..	1	..
and Lacerated Wound of Forehead,	1	..	..	..	..	..	1
Crush of Hand,	5	..	2	1	..	..	2
Dislocation of Shoulder, Subcoracoid, Wrist, Comp'd; Fracture of Ulna Compound,	3	..	2	..	1	..	..
Dislocation of Vertebra,	1	..	1	..	..	..	..
Fracture of Clavicle,	2	1	1	2	..	..	..
Ununited,	1	..	..	1	..	..	..
and Ribs,	1	..	1	..	..	..	..
Fracture, Colles's,	1	1	2	..	..	..	..
Fracture, Colles's, and Lacerated Scalp Wound,	1	..	..	1	..	..	..
Fracture of Humerus, Head, . . . . .	..	1	1	..	..	..	..
Shaft,	3	1	3	1	..	..	..
Intercondyloid,	1	..	..	1	..	..	..
Internal Condyle,	1	..	..	1	..	..	..
Fracture Radius,	1	..	1	..	..	..	..
and Ulna Comp'd,	1	..	1	..	..	..	..
Fracture of Ulna and Clavicle,	1	..	1	..	..	..	..
Fracture of Thumb Compound,	1	..	..	1	..	..	..
Fracture of Ulna and Radius; Fracture of Pelvis, Compound,	1	..	..	..	..	1	..
Frost-bite of Fingers and Ears,	1	..	1	..	..	..	..
Luxation of Lumbar Vertebra and Paresis,	1	..	..	..	..	..	1
Sprain of Back,	3	..	3	..	..	..	..
Hand,	1	..	1	..	..	..	..
Wrist,	1	3	3	1	..	..	..
Wound, Incised of Hand,	1	..	1	..	..	..	..

SURGICAL CASES.—CONTINUED.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remaining under treatment.
<i>Injuries of Upper Extremity, Axilla, and Spinal Column.—Continued.</i>							
Wound, Lacerated, of Arm and Fract of Ulnar, Compound,	1	..	..	1	..	..	..
Wound, Lacerated of Fingers,	1	..	..	1	..	..	..
Wound, Lacerated of Fingers, with loss of Substance,	1	..	..	..	..	..	1
Wound, Lacerated and Crush of Ends of Fingers,	1	..	..	1	..	..	..
Wound, Punctured of Elbow Joint,	1	..	1	..	..	..	..
<i>General Surgical Diseases.</i>							
Abscess, Abdominal Wall,	1	..	..	..	..	..	1
Antrum, . . . . .	..	1	..	1	..	..	..
Arm,	2	..	2	..	..	..	..
Axilla,	2	..	2	..	..	..	..
Ischio-rectal,	1	2	1	1	1	..	..
with Fistula in Ano	1	..	1	..	..	..	..
Labium Majora, . . . . .	..	1	1	..	..	..	..
Leg,	3	..	2	1	..	..	..
and Periostitis of Tibia,	1	..	..	1	..	..	..
Mammary, . . . . .	..	1	1	..	..	..	..
Neck, . . . . .	..	1	..	..	1	..	..
Perityphlitic,	1	1	1	..	..	..	1
Bunion,	1	..	1	..	..	..	..
Bursitis, Purulent, . . . . .	..	1	..	..	1	..	..
Calculus, Vesical,	1	..	1	..	..	..	..
Caries of Alveolar Process, . . . . .	..	1	1	..	..	..	..
of Femur,	4	..	2	2	..	..	..
of Phalanges (Fingers),	1	..	1	..	..	..	..
of Radio-Carpal Articulation,	1	..	..	..	..	1	..
of Metatarsus,	2	..	2	..	..	..	..
of Tibia,	2	..	1	1	..	..	..
of Zygoma,	1	..	..	1	..	..	..
Cellulitis of Arm,	1	..	1	..	..	..	..
and delirium tremens,	1	..	..	..	..	1	..
Face, Bronchitis, and <i>Mania à potu</i> ,	1	..	..	..	..	1	..
of Foot,	2	..	2	..	..	..	..
of Hand,	2	1	3	..	..	..	..
of Leg,	5	2	5	2	..	..	..
of Penis,	1	..	1	..	..	..	..
Cystitis, Acute, . . . . .	..	2	..	2	..	..	..
Chronic,	1	..	..	1	..	..	..
Epulis of Superior Maxilla, . . . . .	..	1	1	..	..	..	..
Erysipelas, Phlegmonous,	3	..	2	..	..	1	..
Fistula in Ano,	1	1	1	..	1	..	..
Gangrene of Finger,	1	..	..	..	..	1	..
Foot,	2	..	1	..	..	1	..

SURGICAL CASES.—CONTINUED.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remaining under treatment.
<i>General Surgical Diseases.—Continued.</i>							
Gangrene of Leg, Superficial from Traumatism, . . . . .	..	1	1	..	..	..	..
Gangrene of Toes and Pneumonia,	1	..	1	..	..	..	..
Hare lip,	1	..	1	..	..	..	..
and Cleft Palate,	2	..	..	2	..	..	..
Hemorrhoids, External,	3	..	2	1	..	..	..
Internal,	1	..	..	1	..	..	..
and Cystitis, . . . . .	..	1	..	..	1	..	..
Fissure of anus,	1	..	1	..	..	..	..
Hernia, Inguinal, Strangulated,	4	1	5	..	..	..	..
Housemaid's Knee, Suppurative,	1	..	..	..	..	..	1
Hydrocele,	1	..	1	..	..	..	..
Hypertrophy of Prostate—Retention of Urine and Cystitis,	2	..	..	1	..	1	..
Hypertrophy of Prostate, Severe Prostatic Hemorrhage,	1	..	..	1	..	..	..
Hypertrophy of Prostate, Acute Prostatitis, and Fatty Infiltration of Heart,	1	..	..	..	..	1	..
Necrosis of Metatarsal Bones,	1	..	..	1	..	..	..
Neuralgia, Triguinal, . . . . .	..	4	3	1	..	..	..
Paraphimosis,	1	..	1	..	..	..	..
Periostitis of Tibia,	2	..	2	..	..	..	..
Phimosis, Congenital,	2	..	2	..	..	..	..
Prostatitis, Acute,	1	..	1	..	..	..	..
Septicaemia, Chronic, . . . . .	..	1	..	..	..	1	..
Tubercular Glands of Neck,	1	..	..	1	..	..	..
Tumors, Carcinoma of Axilla, Recurrent, . . . . .	..	2	..	1	..	1	..
Tumors, Carcinoma of Breast, Encephaloid, . . . . .	..	1	1	..	..	..	..
Tumors, Carcinoma of Breast, Scirrhus, . . . . .	..	5	3	1	..	..	1
of Face,	1	..	..	..	..	1	..
of Liver,	1	..	..	..	..	1	..
of Neck,	1	..	..	..	1	..	..
of Omentum,	1	..	..	..	..	1	..
of Pancreas,	2	..	..	..	1	1	..
Cystic of Thorax, . . . . .	..	1	1	..	..	..	..
Dermoid of Buttock,	1	..	1	..	..	..	..
of Cheek,	1	..	1	..	..	..	..
Epithelioma of Ear,	1	1	2	..	..	..	..
of Hand,	1	..	..	1	..	..	..
of Lip,	6	..	4	1	1	..	..
of Penis,	1	..	..	1	..	..	..
Fibroma of Neck,	1	..	1	..	..	..	..
Fibro Lipoma of Thigh, . . . . .	..	1	1	..	..	..	..
Fibro-Sarcoma of Neck, . . . . .	..	1	1	..	..	..	..
Lipoma of Arm, . . . . .	..	1	1	..	..	..	..
of Foot,	1	..	1	..	..	..	..
Osteo-Sarcoma of Ilium,	1	..	..	..	..	1	..

SURGICAL CASES.—CONTINUED.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remaining under treatment.
<i>General Surgical Diseases.—Continued.</i>							
Tumors, Sarcoma of Groin, . . . . .	..	1	..	..	1	..	..
Tumor (?) of Jaw, . . . . .	..	1	..	..	..	..	1
Ulcer of Cheek,	1	..	..	1	..	..	..
of Foot,	4	..	4	..	..	..	..
of Heel,	1	..	1	..	..	..	..
of Leg, Chronic,	7	6	9	3	1	..	..
Syphilitic, . . . . .	..	3	3	..	..	..	..
Varicose,	4	5	4	2	..	*1	2
of Rectum,	1	..	..	1	..	..	..
of Stump—Index Finger,	1	..	1	..	..	..	..
Whitlow,	1	..	..	..	..	..	1
<i>Veneral and Skin Diseases.</i>							
Balano-posthitis,	1	..	1	..	..	..	..
Bubo,	1	..	..	1	..	..	..
Chancroids,	2	1	3	..	..	..	..
and Bubo,	2	..	1	1	..	..	..
with Syphilis,	1	..	..	1	..	..	..
Dermatitis from Rhus poisoning,	1	..	1	..	..	..	..
Eczema, general,	3	1	2	1	1	..	..
Erythematous, . . . . .	..	1	..	1	..	..	..
of Legs, Chronic,	1	..	..	1	..	..	..
Epididymitis,	1	..	1	..	..	..	..
Gonorrhœa,	4	..	3	1	..	..	..
and Chancroids,	1	..	1	..	..	..	..
Influenza,	1	..	1	..	..	..	..
Lymphangitis of Arm,	1	..	..	1	..	..	..
Gonorrhœal Rheumatism,	2	..	1	1	..	..	..
Herpes Zoster,	1	..	1	..	..	..	..
Irritation of Scalp from Pediculi, . . . . .	..	1	1	..	..	..	..
Lupus, . . . . .	..	1	..	..	..	..	1
Oorchitis,	1	..	1	..	..	..	..
and Abscess of Testicle,	1	..	..	..	1	..	..
Phimosis, Syphilitic,	1	..	..	1	..	..	..
Psoriasis,	2	..	..	2	..	..	..
Retention of Urine from Stricture,	4	..	..	3	..	1	..
Stricture of Urethra,	5	..	2	3	..	..	..
and Cellulitis of Penis and Scrotum,	1	..	..	1	..	..	..
at Meatus,	1	..	1	..	..	..	..
Traumatic,	1	..	..	1	..	..	..
Syphilis, Hereditary,	1	1	..	1	..	..	1
Secondary,	5	2	3	3	..	..	1
Tertiary,	2	2	1	2	1	..	..
Total,	342	87	243	99	18	41	28

* Acute dysentery.

ORTHOPÆDIC CASES.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remaining under treatment.
Ankylosis, partial of Hips and Knees,	..	1	..	..	..	..	1
Arthritis of Hip,	..	1	..	1	..	..	..
of Knee, Tubercular,	2	..	..	1	1	..	..
of Wrist,	1	..	..	1	..	..	..
Morbus, Coxarius,	5	5	..	7	..	..	3
Pott's Disease,	3	2	..	3	1	..	1
and Morbus Coxarius,	1	..	..	..	..	..	1
Rachitis,	..	3	2	1	..	..	..
Anterior Curvature of Tibia,	..	1	1	..	..	..	..
Sacro-Iliac Disease,	1	1	..	1	..	1	..
Synovitis of Knee,	4	3	2	3	1	..	1
Talipes Valgus, Double,	..	1	1	..	..	..	..
Varus,	1	2	3	..	..	..	..
Totals,	18	20	9	18	3	1	7

EYE AND EAR CASES—INDOOR.

Blepharo, Adenitis,	..	1	1	..	..	..	..
Cataract, Senile,	..	2	..	1	1	..	..
Conjunctivitis, Gonorrhoeal,	1	1	1	..	..	..	1
and Gonorrhoea,	..	1	..	..	..	..	1
Phlyctenular,	1	..	..	1	..	..	..
Cornea, Burns of,	1	..	1	..	..	..	..
Dislocation of Lens and Rupture of							
Schlerotic,	1	..	..	1	..	..	..
Iritis,	2	..	1	..	..	..	1
Syphilitic,	1	..	..	1	..	..	..
Keratitis, Acute,	2	2	2	2	..	..	..
Interstitial,	..	2	1	1	..	..	..
Phlyctenular,	..	1	1	..	..	..	..
Syphilitic,	..	1	..	1	..	..	..
Kerato—Iritis,	..	1	..	1	..	..	..
Otitis Media, Purulent,	1	2	1	2	..	..	..
Acute, Fibroid,							
Phthisis,	1	..	..	1	..	..	..
Panophthalmitis,	1	..	..	1	..	..	..
Staphyloma of Cornea,	1	..	..	..	1	..	..
Strabismus, Converging,	..	3	..	2	1	..	..
Trachoma,	1	1	..	1	1	..	..
Wound of Cornea and Face, Incised;							
Prolapse of Iris,	2	..	1	1	..	..	..
Totals,	16	18	10	17	4	..	3

EYE AND EAR CASES—OUTDOOR.

	Male.	Female.
Abscess of Antrum, . . . . .	..	1
Adenoid Growths of Pharynx,	2	2
Blepharo, Adenitis, . . . . .	..	5
and Adenoids, . . . . .	..	1
Conjunctivitis, . . . . .	..	1
Choroiditis, . . . . .	..	1
Conjunctivitis, Acute,	1	..
Catarrhal, . . . . .	..	1
Chronic, . . . . .	..	2
Diphtheretic, . . . . .	..	1
Phlyctenular,	2	2
Coryza, . . . . .	..	1
Choroiditis and Opacity of Vitreous,	1	..
Deflected Septum Nasi,	1	..
Dislocated Lens,	1	..
Ecchymosis of Lower Eyelid, . . . . .	..	1
Hypermetropic, . . . . .	..	5
Hypertrophied, Follicles of Tongue, . . . . .	..	1
Interior Turbinated Bone,	1	..
Impacted Cerumen in External Auditory Meatus,	1	2
Keratitis, Interstitial,	1	..
Phlyctenular, . . . . .	..	1
Myopia and Supraorbital Neuralgia, . . . . .	..	1
Myringitis,	1	1
Naevus of Ear, . . . . .	..	1
Nasal Catarrh,	1	2
Polypus, . . . . .	..	1
Neuro-Retinitis,	1	..
Otitis Externa, . . . . .	..	1
Media, Chronic,	4	3
Subacute,	1	..
Suppurative,	2	1
and Converging Strabismus, with Polypus of Nose, . . . . .	..	1
Pharyngitis,	1	..
Staphyloma of Iris, . . . . .	..	1
Strabismus, Convergent, . . . . .	..	1
Stricture of Lachrymal Duct, . . . . .	..	1
Trachoma,	1	1
Totals,	23	45

TABLE OF OPERATIONS.

	Male.	Female.		Male.	Female.
Abcission of Prolapse of			Division of Fraenum Lin-		
Iris,	2	..	gua,	1	..
Amputation of Arm,	1	..	Drainage of Pleural Cavity		
of Breast, . . . . .	..	1	for Empyema,	1	..
of Breast and Removal			Etherizing for aid in Diag-		
of Axillary Glands, . . . . .	..	1	nosis,	1	3
of Finger,	5	1	Excision of Elbow Joint,		
of Fingers,	3	..	of Head of Metatarsal		
of Fingers through the			Bone of Great Toe,	1	..
Metacarpal Bones,	1	..	of Metatarsal Bone of		
of Foot at Ankle Joint,			Great Toe,	1	..
of Hand through Fore-			of Omentum protruding		
arm,	2	..	from Stab wound of		
of Leg,	7	..	Abdomen,	1	..
of Thigh,	3	..	Extraction of Senile Cata-		
of Toe,	1	..	ract, . . . . .	..	1
of Toe with Metatarsal			Incision, Abscess of:		
Bone,	2	..	Abdominal Wall,	1	..
of Toes,	3	..	Antrum, . . . . .	..	1
of Toes with Metatarsal			Finger,	1	..
Bones,	3	..	Inguinal Region,	1	..
Aspiration of Abdomen			Ischio-rectal Region,	1	..
per Vagina, . . . . .	..	1	Knee,	2	..
Aspirations of Bladder,	1	..	Leg,	2	..
Breaking up adhesions for			Penis,	1	..
partial Anchylosis of			Perineum,	1	..
Knee, . . . . .	..	1	Thigh,	1	1
Cauterization of Chan-			Incision:		
croids,	1	..	Bubo,	2	..
of Urethral Carnucle, . . . . .	..	1	Cellulitis of Arm,	3	..
Colporrhaphy, . . . . .	..	5	of Foot,	3	..
Curetting of Abscess:			of Forearm,	1	..
Axilla,	1	..	of Hand,	5	..
Ischio-rectal, . . . . .	..	2	of Leg,	3	..
Leg,	2	..	and Drainage in		
Perityphlitic and Drain-			Compound Fracture	1	..
age, . . . . .	..	1	of Thumb,	1	..
Curetting of:			of Toe,	1	..
Fistule, Ischio rectal,	1	..	Cornea, (Sacmisch's		
Knee Joint, and Inci-			Operation.),	1	..
sions for Drainage,	1	..	Compound Fracture of		
Sinus of Arm,	1	..	Tibia and Fibula with		
Sinus of Stump and In-			Drainage,	1	..
cision,	1	..	Epididymitis,	1	..
Stump after amputation			Exploratory of Arm,	1	..
of Leg,	1	..	of Face,	1	1
Ulcer of Cheek,	1	..	Hand, with Drainage,	1	..
Ulcers of Legs, . . . . .	..	1	Hydrocele, Radical		
Uterus, . . . . .	..	2	Cure,	1	..
Circumcision,	8	..	Perineum, for Punc-		
Divulsion of Stricture of			tured wound,	1	..
Urethra,	1	..	Periostitis of Tibia,	4	..

TABLE OF OPERATIONS.—CONTINUED.

	Male.	Female.		Male.	Female.
Incision:			Operation for:		
Prepuce for Paraphimosis,	3	..	Closure of Recto-Vaginal Fistula, . . . . .	..	1
Prepuce for Phimosis, Inflammatory,	3	..	Congenital Absence of Meatus,	1	..
Suppurating Wound of Foot,	1	..	Cutting away Redundant Tissue after Hare-lip operation,	1	..
Thigh with Drainage, Tubercular Glands of Neck,	1	..	Denuding and Suturing angles of Mouth after Plastic Operation,	1	..
Ulcer, Chronic,	1	..	Examination and Dressing of Lacerated arm,	1	..
Wound with Drainage, Laparotomy for Caesarean Section,	1	..	Fibrous Ankylosis of Knee,	2	..
for Oöphorectomy, . . . . .	..	1	Fistula in Ano,	2	..
for Ovariectomy, . . . . .	..	1	Hare-lip,	4	..
Ligation of Anterior Temporal Artery,	1	..	Double,	2	..
of Radial Artery,	1	..	Hemorrhoids, Ligature, Neuralgia of Inferior Dental Nerve,	8	1
Manual Stretching of Ligaments in Talipes Equinovarus,	1	1	Infraorbital Nerve, . . . . .	..	1
Meatotomy,	1	..	Supraorbital Nerve, . . . . .	..	1
Opening Abscess of:			Reduction of Strangulated Inguinal Hernia	1	..
Axilla,	1	..	Reduction of Strangulated Inguinal Hernia Radical Cure, . . . . .	..	1
Bartholin's Gland, . . . . .	..	1	Returning Pedicle after partial Rhinoplastic Operation,	1	..
Eyelid,	1	..	Secondary Hemorrhage, Packing Tibia,	1	..
Face,	1	..	Trachoma, Squeezing, Wiring Ends of Tibia in Compound Fracture,	1	5
Finger,	1	..	Osteotomy of:		
Foot,	1	2	Femur for Knock-Knee, McEwen's Operation, . . . . .	..	1
Inguinal,	2	..	Tibia for Anterior Curvature of Legs, Double, . . . . .	..	1
Ischio-rectal,	2	..	Tibia for Bow-Legs,	1	..
Neck,	3	1	Tibia for Bow-Legs, . . . . .	..	1
Pelvis (?) . . . . .	..	1	Paracentesis of Abdomen, of Membrana Tympani, of Thorax,	2	4
Penis,	1	..	Perineorrhaphia,	3	2
Thigh,	1	..	Plastic operation for Lacerated Wound of Hand and Amputation of Thumb and Fingers,	1	19
Typhlitis,	1	..			
Opening:					
Furuncles of Arm,	1	..			
Tubercular Glands of Neck,	1	..			
Sinus of Leg,	1	..			
of Penis,	1	..			
Operation for:					
Caries of Alveolar Process Superior Maxilla, . . . . .	..	1			
Caries of Femur,	4	..			
of Tibia,	4	..			
Closure of Flaps of Stump after amputation,	1	..			

TABLE OF OPERATIONS.—CONTINUED.

	Male.	Female.		Male.	Female.
Plastic Operation for loss of Portion of Ala of nose,	1	..	Removal of:		
Reduction of:			Fragments of Bone in Compound Fracture of Orbit,	1	..
Dislocation of Hip, Dor-sal,	1	..	Fragments of Bone in Compound Fracture of Skull,	1	..
Dislocation of Humerus, Sub-coracoid,	1	..	Fragments of Bone in Compound Fracture of Tibia,	1	..
Dislocation of Shoulder,	2	..	Lipoma of Arm, . . . . .	..	1
Fracture of Astragalus,	1	..	Lipoma of Foot,	1	..
Fracture of Femur, Compound,	1	..	Lipoma of Thigh, . . . . .	..	1
Fracture of Humerus,	1	..	Osteo-sarcoma of Ilium,	1	..
Fracture of Humerus, Radius, and Ulna, Compound,	1	..	Polypus, Aural, . . . . .	..	1
Fracture of Tibia, Head,	1	..	Polypus, Nasal, . . . . .	..	2
Strangulated Inguinal Hernia, Taxis,	2	..	Uterine, . . . . .	..	1
Removal of:			Tonsil,	1	..
Adenoids, Posterior Nasal,	17	10	Tumor of Neck,	1	..
Adenoids, Upper Eyelid,	2	1	Resection of:		
Axillary Glands,	3	..	Femur in Compound Fracture,	1	..
Carcinoma of Breast, Scirrhus, . . . . .	..	1	Lower end of Radius, Tibia in Compound Fracture,	1	..
Carious Fibula,	1	..	Sequestrotomy,	1	..
Cyst of Buttock, Dermoid,	1	..	Strabotomy, . . . . .	..	3
Cyst of Cheek, Dermoid,	1	..	Suturing Incised Wound of Breast, . . . . .	..	2
Cystic Tumor of Labium, . . . . .	..	1	of Eyelid,	1	..
Cystic Tumor of Thorax, . . . . .	..	1	of Foot,	1	..
Epithelioma of Hand,	1	..	of Hand,	2	..
Epithelioma of Lip,	1	..	of Scalp,	2	..
Epithelioma of Lip and Plastic Operation,	3	..	of Throat,	1	..
Epithelioma of Prepuce,	1	..	Suturing Lacerated Wound of Cheek, . . . . .	..	1
Fibro-sarcoma of Neck, . . . . .	..	1	of Forehead,	1	..
Fragments of Bone in Compound Commi-nuted Fracture of Femur,	1	..	of Lip,	1	..
Fragments of Bone in Compound Commi-nuted Fracture of Ilium	1	..	of Scalp,	3	..
Radius and Ulna,	1	..	Tenotomy of Adductors of Thigh, . . . . .	..	1
Fragments of Bone in Compound Depressed Fracture of Skull,	2	..	Tenotomy of both Tendo Achillis,	1	..
			Trachelorrhaphy, . . . . .	..	13
			Urethrotomy Internal,	3	..
			Total,	263	114

Ether has been administered in	186 Operations.
Chloroform has been administered in	23 "
Cocaine " " " " 	72 "
No Anæsthetic was " " 	96 "

G. A. PECK,

House Surgeon.

TABLE OF TOTALS.

	Male.	Female.	Recovered.	Improved.	Unimproved.	Died.	Remaining under treatment.
Medical Cases,	340	194	243	110	34	100	47
Surgical Cases,	342	87	243	99	18	41	28
Orthopædic Cases,	18	20	9	18	3	1	7
Eye and Ear Cases,	16	18	10	17	4	..	3
Gynæcological Cases, . . . . .	..	69	26	29	7	3	6
Obstetrical Cases,	22	50	50	..	*9	†7	6
Total,	738	438	581	271	75	152	97

* Left before Confinement.

† Three Stillborn, one Hair-Lip, one Premature, one Diphtheria in Infant, one Pregnancy.

SUPERINTENDENT'S REPORT.

To the Executive Committee :

GENTLEMEN, — I herewith submit the thirty-seventh annual report of the management of the Hartford Hospital, consisting of a detail of the receipts, disbursements, number of patients, results of treatment, and such other information as may be of interest.

The number of patients in the Hospital, October 1, 1891, was 102 — 58 males and 44 females. During the year 1,074 have been admitted, making an aggregate of 1,176 patients under treatment — 738 males and 438 females.

Of this number, 581 have recovered, 271 have improved, 75 not improved, 152 have died, and 97 remain under treatment — 58 males, 39 females. Of the deaths, 30 were hopeless cases and lived but a few days, 21 were the result of accidents and lived but a few hours after admission, thirteen were due to consumption. There have been 28 births — 21 males and 7 females.

The whole number of weeks occupied was 6,258, of which citizens occupied $6,200\frac{5}{7}$, State beneficiaries $39\frac{5}{7}$, and U. S. Marine patients $17\frac{4}{7}$.

There have been 82 patients occupying 465 weeks supported entirely by charity.

The appropriation from the State of \$5,000.00 has partially supported 906 patients at the rate of \$1.04 per week for each patient.

The number of State beneficiaries was 10. The number of Marine patients was 10. The daily average of patients for the year was 120.

The greatest number any one day was 157, and the least 89.

The average duration of patients was $5\frac{2}{7}$ weeks. The average cost per week for each patient was \$7.82.

There have been 507 Americans and 496 foreigners.

Patients have been admitted from 59 different towns in the State.

The graduates from the training-school for nurses during the year have been: Miss Annie E. Palmer, Miss Jessie M. Randall, Miss Mary A. Rogers, Miss Mary J. Harrison, Miss Minnie I. Bacon, Miss Hattie E. Allen, Miss Mary L. Marsh, Miss Lois S. Peck, Miss Mary A. Farnsworth, Miss Ella J. French.

The training-school now numbers 28 members.

MEMBERS OF THE TRAINING-SCHOOL.

Lillian M. Alexander,
 Janie M. McNeil,
 Eleanor Campbell,
 Lois Pomeroy,
 Carmel Cretcher,
 Margaret Cunningham,
 Anna E. Brazos,
 Mildred E. Sherwood,
 Ellen S. Richardson,
 Emily A. Dalton,
 Minnie A. Havens,
 Harriet Hendrick,
 Lillian A. Dermont,
 Eva Trenholm,

Christine J. Rae,
 Eliza McKean,
 Mary A. Rood,
 Julia E. Fergusson,
 Fannie H. Nichols,
 Lily W. Stevens,
 Francis O. Mather,
 Mary E. Jennison,
 Geneva Dunning,
 Sarah E. Harrison,
 Inez L. Fowler,
 Adelaide M. Throope,
 Ann ette E. Jenkins,
 Caroline Wright.

MISS PERSIS M. PLUMER, *Matron.*

MISS EMMA B. RICHARDS, *Assistant.*

*The HARTFORD HOSPITAL**in account with LEANDER HALL, Sup't.*

Dr.		Cr.	
1891-92. To am't paid for—		1892. By am't received from —	
Anæsthetics,	\$123.34	W. W. Jacobs, Treas.,	\$48,627.67
Barn Expenses,	287.56	Board of patients from	
Breadstuffs,	1,130.70	various towns in the	
Butter and Eggs,	2,621.69	State,	12,803.46
Fruits and Vegetables,	1,167.64	Paying Patients,	10,871.44
Freights and Cartages,	24.69	State Beneficiaries,	255.44
Fuel,	3,825.11	State Appropriation,	5,000.00
Furniture,	2,065.48	Marine Patients,	96.00
Gas,	1,401.55	Services of nurses,	1,152.40
Groceries,	1,702.20	Sales,	29.83
Ice,	300.00	Registrar of Births and	
Instruments,	293.10	Deaths,	48.25
Meats, Fish, and Fowls,	6,742.64	Donations,	80.00
Medicine,	793.22		
Milk,	2,677.15		
Miscellaneous,	595.81		
Printing, Stationery, etc.,	435.92		
Repairs and Improvements,	5,199.52		
Salaries,	15,360.36		
Surgical Dressings,	651.49		
Washing and Soap,	218.61		
Water,	323.50		
Whisky, Wine, etc.,	686.39		
Total current expenses,	\$48,627.67		
Am't paid Treasurer,	30,336.82		
	<u>\$78,964.49</u>		<u>\$78,964.49</u>

*Detailed Statement of the Receipts of the HARTFORD HOSPITAL from
October 1, 1891, to October 1, 1892.*

Received from State Appropriation :

December 31, 1891,	-	-	-	\$1,250.00
March 31, 1892,	-	-	-	1,250.00
June 30, 1892,	-	-	-	1,250.00
September 30, 1892,	-	-	-	1,250.00
				<u>\$5,000.00</u>

Received from various towns in the State :

December 31, 1891,	-	-	-	\$3,319.97
March 31, 1892,	-	-	-	3,070.00
June 30, 1892,	-	-	-	3,232.13
September 30, 1892,	-	-	-	3,181.36
				<u>\$12,803.46</u>

Received from Paying Patients :

December 31, 1891, - - -	\$2,146.05
March 31, 1892, - - -	2,279.03
June 30, 1892, - - -	3,590.83
September 30, 1892, - - -	2,855.53
	<hr/>
	\$10,871.44
Received from State for care of Soldiers, - -	255.44
Received from U. S. Collector for Seamen, - -	96.00
Received from services of Nurses, - - -	1,152.40
Received from Sales, - - -	29.83
Received from Registrar of Births and Deaths, -	48.25
Donation, - - - - -	80 00
	<hr/>
Total Receipts, - - - - -	\$30,336.82

Number of Persons who have Received the Benefits of the Hartford Hospital during the Year ending September 30, 1892.

	Male.	Female.	Total.
Number of patients in the Hospital, October 1, 1892, - - - -	58	44	102
Admitted during the year, - - -	680	394	1,074
Total, - - - - -	738	438	1,176
Of this number have been discharged :			
Recovered, - - - - -	365	216	581
Improved, - - - - -	175	96	271
Not improved, - - - - -	37	38	75
Died, - - - - -	103	49	152
Total, - - - - -	680	399	1,079
Remaining October 1, 1892, - -	58	39	97
Whole number admitted to October 1, 1892, - -	-	-	16,847
" " discharged to October 1, 1892, - -	-	-	16,750
" " remaining October 1, 1892, - -	-	-	97

Monthly Admissions from October 1, 1891, to October 1, 1892.

	Male.	Female.	Total.		Male.	Female.	Total.
October,	38	34	72	May,	75	27	102
November,	44	24	68	June,	58	18	76
December,	92	36	128	July,	46	31	77
January,	48	34	82	August,	53	32	85
February,	54	34	88	September,	57	43	100
March,	55	34	89				
April,	60	47	107				
				Total,	680	394	1,074

Americans, 567. Foreigners, 496.

Unknown, 11.

Temperate, 793. Intemperate, 281.

Occupation of Patients.

Actor,	1	Dyers,	7	Nurses,	6
Agents,	8	Drivers,	20	None,	105
Box-makers,	2	Engineers,	9	Plumbers,	3
Belt-makers,	2	Farmers,	38	Papermaker,	1
Boiler makers,	2	Factory Operat.,	20	Porters,	2
Bakers,	5	Firemen,	6	Peddlers,	6
Barbers,	5	Gardener,	1	Painters,	18
Bartenders,	5	Hostlers,	13	Polishers,	10
Butchers,	7	Harnessmakers,	4	Quarrymen,	3
Blacksmiths,	10	Housekeepers,	179	Rulemakers,	2
Brakemen,	34	Hatter,	1	Stenographers,	2
Bookkeepers,	3	Joiners,	20	Slaters,	2
Burnishers,	2	Lathers,	2	Shoemakers,	6
Brewer,	1	Locksmiths,	2	Seamstress,	
Cabinet-makers,	2	Launderers,	2	Seamen,	11
Clerks,	19	Laborers,	175	Stonecutters,	6
Cooks,	7	Machinists,	24	Tailors,	4
Cigarmakers,	6	Moulders,	3	Tinsmiths,	2
Compositors,	7	Milliner,	1	Teamster,	1
Clockmakers,	2	Merchants,	5	Teachers,	4
Conductors,	2	Masons,	13	Waiters,	5
Draughtsman,	1	Mechanics,	33	Waitresses,	3
Dressmakers,	3	Manufacturers,	3	Weavers,	9
Domestics,	144	Newsboy,	1	Watchman,	1

Residence of Patients.

Avon,	Glastonbury,	Portland,
Bridgeport,	Granby,	Plymouth.
Barkhamsted,	Hebron,	Rocky Hill,
Bristol,	Harwinton,	Somers,
Berlin,	Hartford,	Southington,
Bloomfield,	Hampton,	Saybrook,
Bolton,	Lebanon,	South Windsor,
Canaan,	Marlboro,	Suffield,
Canton,	Manchester,	Simsbury,
Colchester,	Mansfield,	Stafford,
Columbia,	Meriden,	Tolland,
Chester,	Middletown,	Vernon,
Cromwell,	Naugatuck,	Winchester,
Coventry,	New London,	Windsor,
Ellington,	New Britain,	Waterbury,
East Hartford,	New Hartford,	Wethersfield,
East Haddam,	Norwich.	West Hartford,
East Windsor,	Newington,	Windsor Locks,
Enfield,	New Haven,	Windham.
Farmington,	Plainville,	

Nativity of Patients.

Canada,	25	Italy,	32	Ohio,	1
Connecticut,	374	Illinois,	1	Pennsylvania,	18
Denmark,	7	Massachusetts,	62	Rhode Island,	4
Delaware,	1	Maryland,	8	Russia,	29
Dist. of Columbia,	1	Maine,	8	Scotland,	17
England,	33	Montana,	1	Sweden,	37
Finland,	1	New Brunswick,	1	Switzerland,	5
Florida,	1	New Hampshire,	10	Turkey,	3
France,	2	New Jersey,	7	Unknown,	11
Germany,	64	Nova Scotia,	1	Virginia,	9
Georgia,	1	New York,	46	Vermont,	15
Ireland,	239				

DONATIONS.

Through the kindness of the editors we have received the *Hartford Daily Times*, the *Hartford Daily Courant*, the *Hartford Daily Post*, the *Hartford Herald*, the *New York Medical Journal*, the *Churchman*, the *Hartford Telegram*, and the *Medical Times and Register*.

Books, Magazines, and Papers.

Mrs. Stephen Marston, Mrs. Atwood Collins, Miss Worth, Miss Lena Bestor, Mrs. H. L. Strong, Mrs. T. D. Tucker, Mrs. A. T. Smith, Miss Mable Perkins, Mrs. J. S. Quin, Miss Daisy Preston, Mrs. E. L. Sluyter, Mrs. S. L. Attleton, Mrs. W. Smith, Mrs. James Nichols, Mrs. R. E. Day, Mrs. Bird, Mrs. Geo. R. Shepherd, Mrs. C. R. North, Mrs. E. Martin, Mrs. H. E. Russeque, Mrs. W. E. Foster, Mrs. P. H. Billings, Mrs. J. C. Mead, Mrs. A. P. Hyde, Mrs. J. M. Holcomb, Mrs. E. A. Smith, Mrs. Susan Robbins, Mrs. F. B. Loomis, Mrs. J. A. Hodge, Mrs. Graham Taylor, Mrs. W. H. Post, Mrs. L. Chapman, L. E. Pilgrim, Rufus Jackson, Samuel Knous, Boys of the Good Will Club, St. John's Church, John Dimond, George B. Coffin, Edward Goerz, St. Mary's Guild, Hartford Library Association, Henry J. Gillett, Berlin Bridge Co., Children of Brown School, Wm. T. Marchant, Sammy and Benny Leventhal, Mrs. John Allen, Saybrook; Mrs. Gideon L. Platt, Waterbury; Mrs. J. B. Smith, New Britain; Mrs. Whitehead, Simsbury; Mrs. H. W. Seeley, New Hartford; Mrs. B. F. Williams, Glastonbury.

Clothing, Old Linen, Cotton, etc.

Mrs. S. Marston, Mrs. Talcott, Mrs. Wm. Eaton, Mrs. Atwood Collins, Misses Brace, Mrs. A. E. Burr, Mrs. S. J. Andrews, Mrs. E. S. Goodrich, Mrs. T. J. Vail, Mrs. Geo. W.

Beach, Mrs. Colton, Mrs. S. J. Bestor, Mrs. C. R. Forest, Mrs.
 Sluyter, Mrs. Geo. Kellogg, Miss Worth, Mrs. D. M. Rogers,
 Mrs. Uriah Case, Mrs. J. White, Mrs. L. Daniels, Mrs. C. G.
 Frisbie, Mrs. Chaffee, Mrs. W. T. Bassett, Mrs. D. S. Mose-
 ley, Mrs. J. G. Batterson, Mrs. J. Smith, Mrs. A. E. Hull,
 Mrs. Thos. Talcott, Mrs. W. A. Moore, Mrs. J. D. Bates,
 Mrs. M. K. Talcott, Mrs. Chester Adams, Mrs. S. Hamilton,
 Mrs. W. G. Bradley, Mrs. Thos. McManus, Mrs. S. Clark,
 Mrs. O. D. Woodruff, Mrs. Ada Sprague, Mrs. A. D. Cross,
 Mrs. W. H. Dearborn, Mrs. P. P. Graves, Mrs. C. O. Dem-
 ing, Mrs. J. W. Cone, Mrs. Frances Goodwin, Mrs. J. P.
 Rodgers, Mrs. Geo. Crane, Miss Burbank, Mrs. G. Hargrave,
 Mrs. L. Tiffany, Mrs. E. A. Smith, Mrs. E. R. Beardsley,
 Mrs. Chamberlin, Mrs. Ahern, Mrs. E. Martin, Mrs. G. A.
 Cooper, Miss Dunham, Mrs. E. E. Morgan, Mrs. H. K. W.
 Welch, Mrs. Fergusson, Mrs. T. H. Honiss, Mrs. Stone, Mrs.
 Wilder Smith, Mrs. Fred Eberwein, Mrs. A. P. Hyde, Mrs.
 Chas. Burrell, Mrs. Hemingway, Mrs. S. A. Ensign, Mrs. A.
 H. Pierce, Mrs. Belden, Mrs. G. M. Bartholemew, Mrs. J. B.
 Garvie, Mrs. Gardener, Mrs. Edward Perkins, Mrs. W. H.
 Havens, Miss Bertha Kellogg, Mrs. W. B. Franklin, Mrs.
 Lyman Jewell, Mrs. H. C. Fenton, Mrs. W. J. Wood, Mrs.
 Graham Taylor, Mrs. Samuel Colt, Mrs. Hotchkiss, Mrs. H.
 C. Markham, Mrs. Thompson, Mrs. J. B. Powell, Mrs. P. H.
 Ingalls, Mrs. E. C. Terry, Miss Laura B. Pease, Mrs. O. D.
 Case, Mrs. Henry Watson, J. E. Dimond, H. E. Cowles, M.
 A. West, J. P. Cowles, Wm. A. Sanborn, Cyrus Brown, J. V.
 Hammond, John Henny, M. Spencer, J. F. Morris, C. J.
 Merrill, Dr. W. A. M. Wainwright, Chas. E. Gross, J. C.
 Parsons, Rev. Albert Guy, Kingsley & Miller, Rev. J. E.
 Davenport, Mrs. John Allen, Saybrook; Mrs. Henry Hart,
 Saybrook; Mrs. Stebbins, Shelburne Falls; Mrs. J. B. Smith,
 New Britain; Miss Nellie Speed, East Hartford; Ladies of
 Grace Church, Saybrook; Mrs. Franklin Woodruff, Berlin,
 Conn.; Comfort Circle of King's Daughters, Whatsoever
 Circle of King's Daughters, The Kindly Club of United
 Workers, Faithful Ten of King's Daughters, St. Thomas' Cir-

cle King's Daughters, Olive Branch King's Daughters, Mission Band of Park Church.

Fruits and Flowers.

Mrs. George Clark, Miss Mary H. Curtiss, Mrs. Hooker, Mrs. J. P. Harbison, Mrs. F. H. Crosswaithe, Mrs. J. B. Powell, Mrs. W. W. Huntington, Mrs. John Coombs, Mrs. A. T. Smith, John Hale, Harry Rapelye, Mrs. J. M. Holcombe, Fred. Goebel, Jr., Mrs. Chas. Dodd, Mrs. Sturtevant, Miss Mary Clark, A. Whiting, Miss Bertha Dennis, Mrs. J. M. Thomson, Mrs. Geo. G. Sill, Mrs. Josiah Allen, The Flower Mission, weekly during the season.

Miscellaneous.

Comfort Powder Co., 6 boxes comfort powder; C. F. Goodrich, toys and games; Warburton Chapel Sunday-school, 4 trays for children's ward; Mrs. J. S. Besse, ice cream and cake for children's ward; Center Church, wine; Mrs. George Clark, 6 vases; Miss Hendee, 2 dozen claret; Mrs. Goodwin, toys; H. E. Phipps, rubber sheeting, etc.; Children of Brown School, toys and pictures; Mrs. Stephen Marston, one wheel chair; Mrs. S. F. Dickerman, Winsted, 2 books; E. F. A. Hautel, Torrington, Conn., dolls, etc.; Friendship St. Baptist Church Sunday-school, Providence, R. I., pictures for children's ward; Park Church Mission Band, \$80.00.

Thanksgiving and Christmas.

Mrs. Geo. W. Smith, oranges; Mrs. Cornwallis, oranges and toys; Miss Dorothy Davis, scrap book; St. John's Sewing School, Christmas carols; Loyal Temperance Legion, toys and oranges; Rev. J. H. Watson, fruit and candy; Mrs. Foster, toys; Hon. Dwight W. Pardee, \$5.00; Mrs. Samuel Colt, 2 turkeys; Mrs. Stebbins, Shelburne Falls, toys.

GENERAL STATISTICS.

YEARS.	Admitted during the year.	NUMBER EACH YEAR.						Remaining at the end of the year.	Daily Average for the year.	NUMBER EACH DAY	
		Under Care.	Discharged.	Recovered.	Improved.	Not Improved.	Dead.			Greatest.	Least.
1860-1861,	45	45	32	21	7	1	3	13	12	14	1
1861-1862,	258	271	214	159	20	12	23	57	27	85	14
1862-1863,	107	164	141	103	15	5	18	23	18	57	11
1863-1864,	157	180	149	103	14	8	24	31	27	45	21
1864-1865,	132	163	142	102	2	9	29	21	27	31	21
1865-1866,	196	277	172	133	5	8	26	45	35	49	21
1866-1867,	221	266	211	176	8	5	24	55	44	59	29
1867-1868,	251	306	250	183	16	15	36	56	50	63	38
1868-1869,	259	315	260	192	18	16	34	55	55	67	42
1869-1870,	248	339	298	220	21	20	37	41	50	62	36
1870-1871,	329	370	303	210	28	18	50	64	63	67	39
1871-1872,	347	411	345	215	42	46	41	66	62	71	59
1872-1873,	370	436	368	206	70	31	55	68	69	76	56
1873-1874,	452	520	422	299	36	29	58	98	79	98	63
1874-1875,	492	590	486	323	53	29	53	104	95	119	71
1875-1876,	603	707	573	376	64	35	57	134	113	136	90
1876-1877,	599	733	613	378	85	49	72	120	130	149	112
1877-1878,	914	1,034	944	591	117	66	100	90	101	122	80
1878-1879,	538	628	533	307	93	37	68	95	97	113	87
1879-1880,	597	692	589	362	93	38	66	103	94	109	78
1880-1881,	649	752	360	392	99	33	102	92	96	107	83
1881-1882,	736	828	734	404	154	62	89	94	97	115	90
1882-1883,	723	817	720	391	161	63	95	97	94	117	83
1883-1884,	701	798	697	362	158	69	93	101	98	118	86
1884-1885,	747	848	746	390	177	81	85	102	114	139	92
1885-1886,	741	843	743	404	178	60	90	100	107	130	63
1886-1887,	770	870	760	402	162	66	117	110	108	139	83
1887-1888,	745	855	764	436	146	56	108	91	108	137	87
1888-1889,	845	936	831	496	148	61	117	105	111	143	83
1889-1890,	998	1,103	983	566	183	71	144	120	127	156	105
1890-1891,	928	1,048	946	522	195	82	145	102	110	132	83
1891-1892,	1,074	1,176	1,079	581	271	75	152	97	120	157	89
	16,798		16,441	10,005	2,843	1,244	2,211				

LEANDER HALL, *Superintendent.*

PROSPECTUS

OF

TRAINING-SCHOOL FOR NURSES.

ADMISSION OF PUPILS TO THE TRAINING-SCHOOL.

1. The Directors of the Hartford Hospital have made arrangements for giving at the Hospital a two-years training to women desirous of becoming professional nurses. The demand for hospital-trained nurses is great, and a well-trained nurse is practically sure of sufficient work after graduation.

2. Persons wishing to receive the course must apply to the Superintendent of the Hospital or the Matron, when, upon approval of the Executive Committee, they will be received as pupil nurses in the Hospital.

3. Candidates must be unmarried or widowed, over twenty-one and under thirty-five years of age; they must present a certificate of sound health from their physician; also a certificate from some responsible person of their good character.

4. Applicants will be received for one month on probation, during which time they will be boarded and lodged at the expense of the Hospital, but will receive no compensation if they leave before the expiration of the month or are found incompetent.

5. The Superintendent or the Matron of the Hospital will have full power to decide as to the fitness of the nurses for the work, and will report to the Executive Committee the propriety of dismissing or retaining them at the end of the month for trial.

6. The same authority can discharge them in case of misconduct or inefficiency, subject to the approval of the Executive Committee.

7. They will reside in the Hospital, and serve as assistants in the wards of the Hospital ; the second year they will be assigned by the lady Superintendent, either to act as nurses in the Hospital, or to be sent to private cases among the rich or poor. When in service they are expected to wear the Hospital uniform.

TRAINING.

Those persons complying with the foregoing conditions will be accepted as pupils by signing a written agreement to remain at the school for two years, and to conform to the rules of the Hospital.

The instruction includes :

1. The dressing of blisters, burns, sores, and wounds ; the preparation and application of fomentations, poultices, and minor dressing.
2. Application of leeches and subsequent treatment.
3. Administration of enemata, the use of the female catheter, and the giving of baths.
4. The care of the patient's room, the principles of ventilation, and their practical application.
5. The best method of friction to the body and extremities.
6. Management of helpless patients, moving, changing, managing positions, and preventing bed sores.
7. Emergencies and their treatment, bandaging, making bandages and rollers, and lining splints.
8. Making beds and changing sheets while the patient is in bed.
9. That no part of the Hospital is clean if it can be made cleaner:

The pupils are taught to prepare food, drinks, and stimulants for the sick ; all that pertains to night, in distinction from day nursing ; to report to the physician accurate observations of the state of the secretions, excretions, pulse, skin, appetite, temperature of the body, intelligence (as to delirium or stupor), breathing, sleeping, condition of wounds,

eruptions, formation of matter, effect of diet, stimulants, and medicine, and to learn the management of convalescents.

Instruction will be given by attending and resident physicians and surgeons at the bedside, and in various other ways by the Matron and her assistants, and under their direction by the head nurses.

The pupils will pass through the various wards, serving and being taught. They will be supplied with board and lodging, and will be paid for their clothing and personal expenses ten dollars a month the first and fourteen dollars a month the second year. This sum, with their education, is considered a full equivalent for their services. When the full term of two years is completed, the nurses thus trained, after passing a final examination, will receive diplomas, certifying to their knowledge of nursing, their ability, and good character. The medal and diploma, or either, of any graduate of the training-school may be revoked for cause by the Executive Committee.

Copy of the paper to be filled out in the candidate's own handwriting and sent to the Superintendent of the Hartford Hospital, Hartford, Conn.

Questions to be answered by the candidate :

1. Name in full, and present address of candidate.
2. Are you a single woman or a widow ?
3. Your present occupation or employment ?
4. Age last birthday, and date and place of birth ?
5. Height ? Weight ?
6. Where educated ?
7. Are you strong and healthy, and have you always been so ?
8. Are your sight and hearing perfect ?
9. Have you any physical defects ?
10. If a widow, have you children ? How many ? Their ages ? How are they provided for ?
11. Where (if any) was your last situation ? How long were you in it ?
12. The names in full, with addresses, of two persons to

whom you refer. State how long each has known you. If previously employed, one of these must be the last employer.

13. Have you ever been a pupil of any other training-school?

14. Have you read, and do you clearly understand, the regulations?

I declare the above statement to be correct.

(Signed)

.....

Candidate.

Date.

For information regarding the reception of pupils in the Training School, or copies of the above application, apply in writing or personally to the Superintendent or Matron of the Hartford Hospital.

LIST OF GRADUATES

HARTFORD HOSPITAL TRAINING-SCHOOL FOR NURSES.

1879.

Mrs. Caroline A. House,	Mrs. Annie M. Morrelle,
Miss Hannah M. Calagan,	Miss Lydia S. Woodward.
*Miss Amelia Cooke,	

1880.

†Miss Lizzie T. Oliver,	Miss Ida F. Barnes.
Miss Mary E. Crane,	

1881.

Miss Kate E. Kinne,	Miss Annie C. Abbe,
†Miss Alice M. Noble,	Miss Marion E. Kingsley,
†Miss Alice M. Delano,	Miss Annie M. Wakefield.
†Miss Georgette T. Rogers,	

1882.

†Miss Mattie E. Kingsley,	Miss Lydia B. Roberts,
†Miss Mary I. Denison,	Miss Jennie McLaughlin.
Miss Elizabeth L. Goodale,	

1883.

†Miss Alice Ewen,	Miss Sarah M. Sheldon,
†Miss Harriet M. Hosking,	Miss Eliza C. Smith,
Miss Lucy A. Kirk,	Miss Charlotte F. Schultz,
*Mrs. Zoe M. Tucker,	Miss Hannah L. Russell.

1884.

†Miss Emma Strickland,	Miss Emma J. Osborne,
†Miss Harriett E. Fuller,	Miss Jennie M. Beardsley,
†Miss Maria A. Clark,	Miss Alice M. Gardner.
*†Miss Josie L. Hubbard,	

1885.

Miss Lucy Way,	Miss Mary A. Murphy,
†Miss Minnie L. McLese,	Miss Lillian C. Catlin,
†Miss Emilie M. Pugsley,	Miss Mary H. Patch.
Miss Mary E. Brown,	

* Died. † Married.

1886.

Miss Martha B. Parker,	Miss Minnie Hicks,
Miss Hattie E. Crocker,	Miss Elma A. Bennett,
Miss Ella J. Holcombe,	Miss Rebecca LaMonte,
†Miss Gertrude E. Morley,	Miss S. Alice Griswold.
Miss Emma L. Tirrell,	

1887.

*Miss Carrie Swettenham,	Miss Jennie B. Methven,
Miss Annie C. McNeil,	†Miss Nellie T. Manning,
Miss Annie Figgis,	Miss Jennie McKean,
Miss Emma Carver,	Miss Juliaette A. Parsons.

1888.

Miss Maria A. Wakefield,	Miss Helen McCloy,
†Miss Hattie B. Smith,	Miss Delia L. Bridgeman,
Miss Jennie McColister,	Miss Annie Black.
Miss Jessie T. Jeffrey,	

1889.

Mrs. Ida D. Lewis,	Mrs. Addie L. Lloyd,
†Miss Annie E. North,	Miss Ella E. Gibbs,
Miss Allie Cornelius,	Miss Bessie C. Taber,
†Miss Henrietta E. Willett,	Miss Rilla J. Perry.

1890.

Miss Alice M. Smith,	Miss Delia M. Smith,
Miss Jennie R. Field,	Miss Harriett A. Lorber,
Mrs. Addie R. Young,	Miss Martha J. Wilkinson,
Miss Alma A. Robinson,	Miss Isabella M. Snelling,
Miss Nancy R. Cornelius,	Miss Mary J. Barr.

1891.

Miss Mary M. Brown,	Miss Emma B. Richards,
Miss Emma J. Lyman,	Miss Etta A. Straw,
Miss Lillie Wind,	*Mrs. Eva C. Swift.

1892.

Miss Annie E. Palmer,	Miss Jessie M. Randall,
Miss Mary A. Rogers,	Miss Mary T. Harrison,
Miss Minnie I. Bacon,	Miss Hattie E. Allen,
Miss Mary L. Marsh,	Miss Lois S. Peck,
Miss Mary A. Farnsworth,	Miss Ella J. French.

* Died.

† Married.

LECTURES DELIVERED BEFORE THE TRAINING-SCHOOL
FOR NURSES, 1891-92.

DATE.	LECTURER.	SUBJECT.
Oct. 7, 1891,	Dr. Beach,	Materi Medica, Official and Non-official Preparations, and Avenues of taking.
" 14, "	Dr. Ingalls,	Obstetrics.
" 28, "	Dr. Beach,	Toxicology.
Nov. 11, "	" "	"
" 18, "	Dr. Campbell,	Talk to Nurses on Etiquette.
" 25, "	" "	Symptoms.
Dec. 4, "	" "	Scarlet Fever, Measles, and Diphtheria.
" 9, "	" "	Pneumonia of Childhood and Quiz.
" 17, "	Dr. Cook,	Atmospheric Gases.
Jan., 1892,	" "	"
Mar. 2, "	Dr. Root,	Physiology of Digestion.
" 9, "	" "	"
" 16, "	Dr. Knight,	Fevers—Typhoid.
" 30, "	" "	Fevers, Diphtheria, Scarlet Fever, Measles, and Chicken-pox.
April 13, "	" "	Fevers—Isolation and Disinfection.

LIST OF LECTURES AND SUBJECTS TO BE DELIVERED TO
THE TRAINING-SCHOOL FOR THE ENSUING YEAR.

DATE.	LECTURER.	SUBJECT.
Oct. 12, 1892,	Dr. C. C. Beach,	The preparation of medicines, their doses and methods of administration.
" 19, "	" "	Poisons and their emergencies.
" 26, "	Dr. Fuller,	The Physiology of digestion, including nutritive enemata.
Nov. 2, "	Dr. Knight,	Topographical anatomy.
" 9, "	" "	Care of the dead, and autopsies.
" 16, "	" "	Circulation, pulse, temperature, respiration, secretions, and excretions.
" 23, "	" "	Examination of urine.
" 30, "	Dr. E. K. Root,	General medical nursing, including the use of leeches, blisters, cupping, enemata, and baths.
Dec. 7, "	Dr. Fuller,	Special nursing in cases of fever.
" 14, "	Dr. Davis,	Care of the sick room (ordinary).
" 22, "	" "	Care of the sick room (contagious diseases).
" 29, "	Dr. E. K. Root,	General medical nursing, including the use of leeches, blisters, cuppings, enemata, baths.

LIST OF LECTURES AND SUBJECTS TO BE DELIVERED TO
THE TRAINING-SCHOOL FOR THE ENSUING YEAR.—
CONTINUED.

DATE.	LECTURER.	SUBJECT.
Jan. 4, 1893,	Dr. C. C. Beach,	Anatomy of the skin.
" 11, "	" "	Care of the skin.
" 18, "	Dr. Wainwright,	Theory of wounds, including inflammation.
" 25, "	" "	Suppuration, erysipelas, septicæmia, pyæmia, and gangrene.
Feb. 1, "	" "	Principles of antiseptic surgery.
" 8, "	Dr. Storrs,	Special nursing in diseases of the thoracic organs.
" 15, "	" "	Special nursing in diseases of abdominal organs.
" 22, "	Dr. Ingalls,	Special nursing in obstetrics.
Mar. 1, "	Dr. Davis,	Surgical dressings.
" 8, "	Dr. Cook,	Fractures.
" 15, "	" "	Application of splints.
" 22, "	Dr. Fuller,	Rest cure.
" 29, "	" "	Nursing in convalescence.
April 5, "	Dr. Ingalls,	Special nursing in obstetrics.
" 12, "	Dr. E. K. Root,	Special nursing in diseases of the nervous system.
" 19, "	" "	Massage, Chorea, Convulsions, Epilepsy.
" 26, "	Dr. Ingalls,	Special nursing in gynecological cases.
May 3, "	" "	Special nursing in gynecological cases.
" 10, "	Dr. Downs,	Special nursing in mental diseases.
" 17, "	" "	Special nursing of the insane.
" 24, "	Dr. Jarvis,	Special nursing in tracheotomy and abdominal surgery.
" 31, "	Dr. Campbell,	Administration of anæsthetics.
June 7, "	" "	Care of patients before and during operations.
" 15, "	" "	Shock, hæmorrhage, and collapse.
" 22, "	" "	Special nursing in children.
" 29, "	Dr. Bacon,	Special nursing in diseases of the ear.
July 6, "	" "	Special nursing in diseases of the eyes.

RULES

FOR THE

ADMISSION OF PATIENTS TO THE HARTFORD HOSPITAL.

1. All patients are admitted by permits from one of the Executive Committee, or from the Superintendent, who shall arrange the price per week, according to the circumstances of the case and accommodations required.

2. All permits are subject to the approval of the Executive Committee, at their regular Hospital meeting.

3. Those who are able to contribute toward their support are received at an agreed rate.

4. The ordinary charge per week is \$6.00, which includes medical and surgical care, together with medicine and nursing.

5. Persons who are desirous of extra accommodations are charged according to circumstances. .

6. Persons who are destitute of friends and means are provided for in various ways.

7. Those persons only who are carried directly from the place of accident are admitted without a certificate from the Executive Committee or Superintendent.

8. No persons having venereal or contagious diseases are admitted into this institution (except by special permit).

Copy of Bond.

HARTFORD, CONN., 18 .
Upon the admission of of into the
"HARTFORD HOSPITAL," at Hartford, I engage to provide or
pay for a sufficiency of clothing for use, and pay the
Treasurer of said institution dollars per week for board,
medicine, and medical attendance; cause said patient to be

removed when discharged, and, in the event of death, to pay the expenses of burial.

Principal.

For value received, I hereby engage to become responsible for the fulfilment of the above stipulations.

Surety.

RULES FOR THE ADMISSION OF VISITORS.

1. Visitors are welcome to the Hospital every week-day, between the hours of 2 and 5 P. M., and on Sunday, for the purpose of attending Divine worship, but on that day they must leave the wards when the services are ended.
2. Visitors shall not enter the wards without the consent of the Superintendent or Matron.
3. Visitors must deposit with the Superintendent or Matron any articles of food or delicacies intended for patients, which articles will be distributed as requested, if not inconsistent with the condition of said patient.

ACTS OF LEGISLATION.

Act Incorporating Hartford Hospital.

Resolved by the Senate and House of Representatives in General Assembly convened :

SECTION 1. That David Watkinson, Ebenezer Flower, A. S. Beckwith, S. S. Ward, A. W. Butler, A. M. Collins, Wm. T. Lee, Job Allyn, Samuel Colt, James B. Crosby, Albert Day, Chester Adams, James G. Bolles, George Beach, Thomas Smith, Jonathan Goodwin, A. W. Birge, Lucius Barbour, and Charles T. Hillyer, and all such persons as are from time to time associated with them, for the purpose of establishing and maintaining a hospital in the city of Hartford, and their successors, be, and they hereby are, incorporated for said purpose, and made a body corporate and politic, by the name of the Hartford Hospital, and by that name shall be capable of suing and being sued, pleading and being impleaded, and may purchase, take, receive, hold, sell, and convey estate, real and personal, to such an amount as may be necessary for the purposes of said corporation ; may have a common seal, and the same may alter and change at pleasure, and may make and execute such by-laws and regulations, not contrary to the laws of this State or of the United States, as shall be deemed necessary for the well-ordering and conducting the concerns of said corporation.

SEC. 2. That said corporation shall be governed by the following articles :

ARTICLE 1. This corporation shall be called the Hartford Hospital. Persons contributing for the use of the corporation at any one time the sum of fifty dollars shall be members for life. Persons contributing the sum of five hundred dollars shall be vice-presidents for life, and also directors for

life; those contributing two hundred dollars shall be directors for life; those twenty-five dollars shall be members for five years, and those ten dollars shall be members for one year.

ART. 2. In order the better to carry into effect the object of the said corporation, the members thereof shall, at an annual meeting, to be held at such time and place as the by-laws of the said corporation shall direct and appoint, elect from their own number, by ballot, and by a majority of the votes given at such election, twelve persons as directors of the said corporation; and the persons so elected, together with the mayor of the city of Hartford for the time being, shall constitute a board of directors. The directors so elected shall hold their offices for one year, and until others are elected in their places. In case of any vacancy in the board the remainder of the directors shall have power to fill such vacancy until the next election.

ART. 3. The board of directors shall, annually, as soon as may be convenient after the said annual election, elect by ballot from among their own number a president, a vice-president, and shall also elect a secretary and treasurer, who shall hold their offices for one year, and until others are elected in their stead. But as many directors may be chosen as there may be directors by subscription.

ART. 4. The said board of directors shall have power to manage and conduct all the business and concerns of the corporation, and to make such laws as may be necessary for the management and disposition of the estate and concerns of the corporation, and to appoint such officers and servants as they may deem necessary. The medical officers, including all attending and consulting physicians and surgeons, shall be appointed annually. Vacancies occurring before the expiration of the year from the time of any appointment shall be filled by the directors as soon as the same can conveniently be done.

ART. 5. A majority of the corporators shall call the first meeting for the election of officers at such time and place in

the city of Hartford as they shall appoint, giving three days' notice thereof by publishing the same in the daily papers of the city; and the annual meeting of said corporation shall be held at such time and place and on such notice as shall be fixed by the by-laws of said corporation.

SEC. 6. This act may be altered, amended, or repealed by the General Assembly.

Approved, May session, 1854.

Resolution Amending the Charter of the Hartford Hospital.

Resolved, That additional members of said corporation may hereafter be elected at any annual meeting by a two-thirds vote of those present without the payment of any sum of money on the part of members so elected.

Approved, January session, 1881.

Amendment of the Charter of the Hartford Hospital.

Resolved by the Senate and House of Representatives in General Assembly convened:

SECTION 1. That, in addition to the powers already conferred upon the Hartford Hospital, said corporation are hereby authorized to establish, in connection with the present hospital buildings, and upon the hospital grounds, or elsewhere, an Old People's Home, or a department or home for the accommodation, support, and maintenance of such aged and infirm persons as shall, from time to time, be admitted to the comforts and privileges of such department or Home, and erect the necessary buildings therefor, and sustain the said Home with such funds and means as shall be given for that purpose, or paid by or for the benefit of the persons admitted to said Home. The board of directors of said Hartford Hospital shall have the power to make and execute any and all such by-laws, rules, and regulations in relation to such department or home, and the management of the same, and the funds pertaining thereto, and generally all the concerns of said department, not contrary to the laws of this State or of the United States, as shall be deemed necessary or proper for

the well-ordering and conducting the concerns of said department, and the same to repeal or change at pleasure; and may appoint, if deemed expedient, a board of managers for said department, with such powers as they shall deem proper, and also such officers and servants as they may deem necessary.

All the rights and privileges conferred by the charter of the Hartford Hospital upon persons contributing for the use of said corporation shall be had and enjoyed by persons and parties limiting their contributions to the use of the department for the aged and the infirm as fully and to the same extent as if no such limitation was connected with such contributions.

All the money and funds already, or which shall be, given or contributed for the uses and purposes of the Hartford Hospital shall be confined to and used for the benefit of the hospital department, and all moneys and funds in any way given or contributed for the aged and infirm department shall be held and used exclusively for that department, under such rules and regulations as may be adopted in relation to a division of the common expenses pertaining to the two departments, which cannot be kept separately and accurately divided.

This department of the Hartford Hospital shall be known as the Old People's Home, and any and all moneys, gifts, legacies, devises, bequests, or other contributions given to the Old People's Home, or for its use, or to the Hartford Hospital, or to any other trustee or trustees, for or in trust for the use of the Old People's Home, shall be good and effectual, and shall be for the use of this department for the aged and infirm created under this act.

SEC. 2. This resolution may be altered, amended, or repealed at the pleasure of the General Assembly.

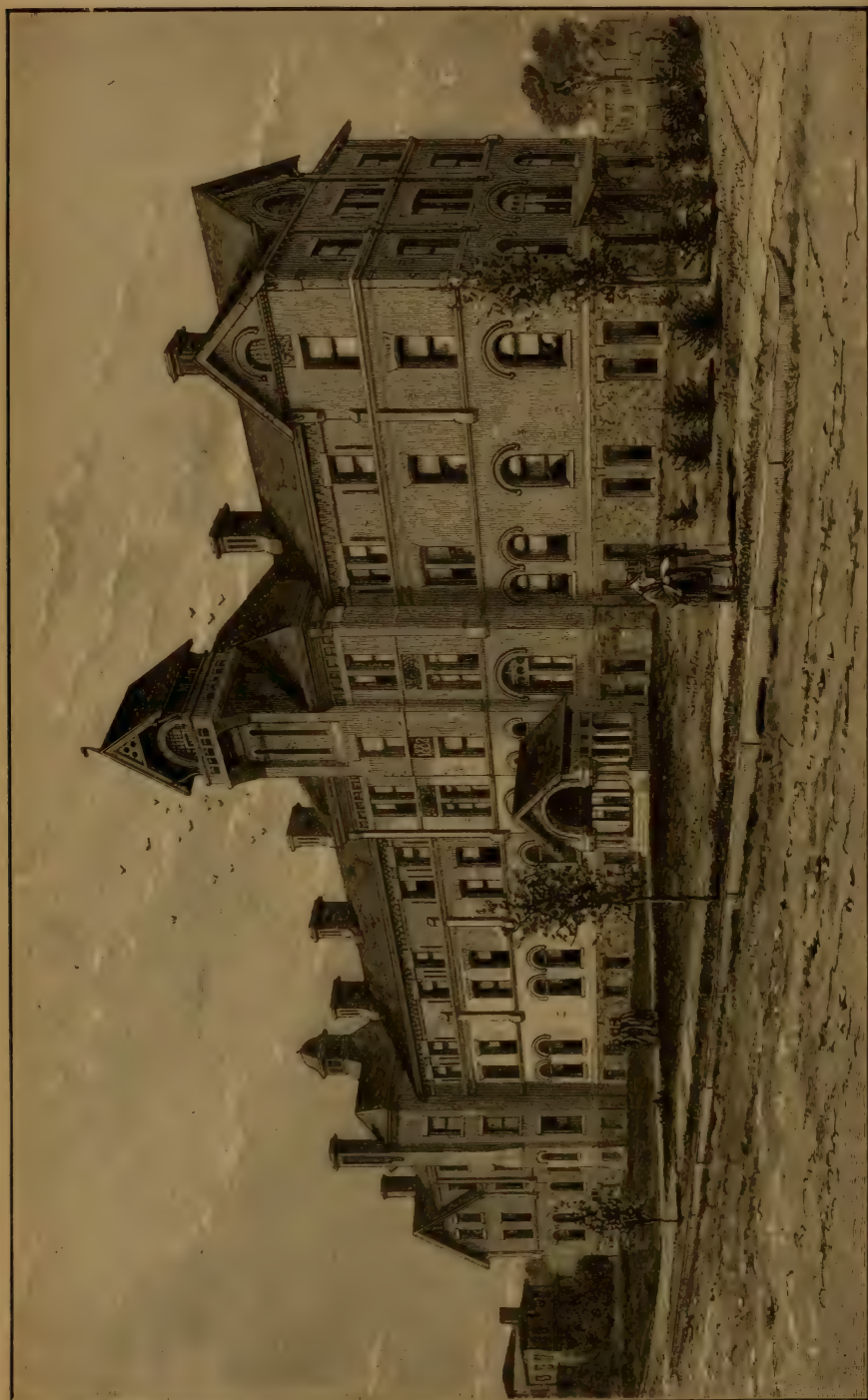
Approved, June 19, 1873.

FORM OF BEQUEST.

FORM OF BEQUEST TO THE HARTFORD HOSPITAL.

ITEM. I give and bequeath to the HARTFORD HOSPITAL, in the city of Hartford, the sum of dollars, to be paid by my executors out of my real or personal estate, as soon as the settlement of my affairs will permit, to the Treasurer of the said institution for the time being, in trust, to be applied by the directors thereof to the humane purposes of said institution.

Note.—Five thousand dollars will endow a free bed in the
HARTFORD HOSPITAL.



OLD PEOPLE'S HOME.

OLD PEOPLE'S HOME.

OFFICERS OF THE OLD PEOPLE'S HOME.

Executive Committee.

HENRY K. MORGAN, 108 Farmington Ave.

HARMON G. HOWE, M. D., 51 Church St.

THOMAS SISSON, 259 Main St.

Superintendent.

LEANDER HALL.

Matron.

MRS. E. J. FOX.

Assistant.

MISS CARRIE M. FOX.

THE EIGHTH ANNUAL REPORT

OF

THE OLD PEOPLE'S HOME.

To the Directors of the Hartford Hospital:

The Executive Committee hereby respectfully submit the following as the report of the Old People's Home for the year ending October 1, 1892.

At the beginning of the year, October 1, 1891, there were eighty-three inmates: males, twenty-nine; females, fifty-four; of these there were seventy-eight permanent inmates and five boarders. They were of the following ages:

Between the ages of 60 and 70,	.	.	.	.	17
“ “ 70 “ 80,	.	.	.	.	46
“ “ 80 “ 90,	.	.	.	.	19
Over ninety years of age,	.	.	.	.	1

Fifteen permits have been issued during the year, fourteen for permanent inmates, and one boarder. Twelve permanent inmates have died during the year, as follows:

Milton Keneey, Manchester, age 68, residence 3 years and 8 months.

Ebenezer T. Lane, South Norwalk, age 84, residence 4 years and 5 months.

Clark Lindsley, Hartford, age 72, residence 1 year and 2 months.

John H. Most, Hartford, age 81, residence 2 years and 8 months.

Hannah K. Hart, New Britain, age 66, residence 2 years and 1 month.

Maranda Lindsley, Hartford, age 71, residence 10 months.

Patience Briggs, West Hartford, age 89, residence 2 years and 8 months.

Hannah Blodgett, Stafford, age 82, residence 2 years and 10 months.

Mariett B. Harmon, West Suffield, age 73, residence 4 years and 1 month.

Clara A. Judd, Hartford, age 67, residence 9 months.

Mary A. Sands, Hartford, age 79, residence 5 months.

Mary G. Kemp, Hartford, age 79, residence 3 years and 8 months.

At the close of the year the total number of inmates was 84: females, 53; males, 31. Permanent inmates 81, boarders, 3.

Between the ages of 60 and 70,	.	.	.	.	16
“ “ 70 “ 80,	.	.	.	.	47
“ “ 80 “ 90,	.	.	.	.	20
Over ninety years of age,	.	.	.	.	1

There are constantly applications for admission in advance of vacancies occurring so that the building is used to its utmost capacity.

FINANCIAL.

By the Superintendent's report, which is hereby appended, it will be seen that the current expenses of the institution for the past year were \$13,391.36, or \$1,030.34 less than last year. The total expenses were \$13,717.02. The total receipts, admission fees, and interest were \$6,627.55, or \$2,151.83 less than last year, leaving a deficiency of \$7,089.47.

For a statement of the fund and indebtedness we refer you to the Treasurer's report, which is published herewith. The following additions to the fund have been made during the year, Mrs. Wm. B. Franklin (in memory of Margret Stanley), \$1,000. Harriet Stebbins estate, \$2,002.47.

In view of the condition of the finances of the Home, and the great amount of good which it is doing, providing a comfortable home and caring for those inmates who are in

the infirmities of age, and bereft of home and its necessities and comforts, the Executive Committee do urge upon the Directors and the public by whose generous gifts the institution is in existence and has been thus far supported, to use their best endeavor to increase the fund to such an amount as will make the Home self-supporting. We are satisfied that it is conducted as economically as is possible, consistent with a wholesome table, clean apartments, and watchful care over the inmates.

IMPROVEMENTS.

The laundry is now in working order, for which the thanks of the Executive Committee are due to the friends who subscribed to its erection, as follows :

Cash,	\$50.00	J. B. Bunce,	\$100.00
Henry K. Morgan,	500.00	Roland Mather,	100.00
Henry Keney,	250.00	G. W. Russell,	100.00
Thomas Sisson,	200.00	Harriet Day Hastings, . .	100.00
G. P. Davis,	100.00	Cook, Hapgood & Co., . .	50.00
H. G. Howe,	100.00		
W. W. Jacobs,	100.00	Total,	\$1,750.00

The grounds are being graded gradually, as soil can be procured, at little expense, from the various excavations for building purposes in the neighborhood. The old cottage in the rear has been razed and the cellar filled. The Committee have aimed to spend as little upon the buildings as was consistent with their proper preservation from decay.

Religious services have been held on Sunday afternoon through the courtesy of Prof. Hart, Drs. Parker and Hodge, Rev. Messrs. Love, Shipman, Dearborn, Watson, Adams, and Thompson; each pastor bringing a choir with him to assist in the service. The thanks of the Committee are due these gentlemen for their faithful and gratuitous services.

DONATIONS.

The following donations have been received during the year :

Brown & Thompson, flowers; Mrs. Thompson, flowers; Miss Mary Clark, Christmas cards, ice cream, box of oranges,

Easter cards; T. Sisson, honey; Miss Pardee, for carriage fare, Easter, Christmas, and sundries; H. G. Howe, book-case; Mr. Smith, books; Miss Bruce, book; Mrs. Wm. H. Post, books.

MATRON.

Mrs. E. J. Fox still occupies this important position with entire satisfaction to the Executive Committee and to the residents at the Home. Her cares are somewhat increased by the retention of all sick and injured inmates at the Home, supplying them with nurses instead of removing them, as heretofore, to the Hospital for treatment.

Respectfully,

HENRY K. MORGAN,	} <i>Executive</i>
H. G. HOWE, M.D.,	
THOMAS SISSON,		Committee.

TREASURER'S REPORT.

OLD PEOPLE'S HOME.

CLOSE OF FISCAL YEAR, ENDED SEPTEMBER 30, 1892.

RECEIPTS.

Balance cash from 1891 report,	\$	170.15
Fund, Bequest of Miss Harriet Stebbins,		2,002.47
Anna L. Franklin fund,		1,000.00
Fund No. 2, deceased inmates,		
Amanda C. House,	\$550.41	
Sarah O. Wallace,	954.00	
Charles Weigel,	35.00	1,539.41
Interest,	Net,	241.86
Manufacturing stocks,		
28 shares Hartford Carpet Co., sold Hartford Hospital		
at par,		2,800.00
Express stocks,		
9 shares Adams express Co., sold Hartford Hospital		
at 147,		1,323.00
Bills receivable, real,		500.00
Laundry, donations received,		1,750.00
L. Hall, Supt., collections for board,		1,735.69
Bills payable,		
Borrowed from Hartford Hospital during year,		4,600.00
Permanent inmate fees,	Net,	4,650.00
Savings banks,		
Drawn during year and paid various inmates,		139.00
Drawn account fund No. 2,		550.41
Inmates' accounts carried to new year,		11,340.48
		<u>\$34,342.47</u>

OLD PEOPLE'S HOME.

CLOSE OF FISCAL YEAR, ENDED SEPTEMBER 30, 1892.

ASSETS.

Real Estate, Fisher lot,	\$1.00	
Hills lot,	1.00	
Tiffany lot,	1.00	
Half interest in Wildwood farm,	1.00	\$ 4.00
Trust accounts, savings bank deposits,	4,930.17	
Miscellaneous investments,	3,151.00	8,081.17
Estate of John H. Most,		1.00
Profit and loss account,		5,319.40
Cash,		1,393.09
		<u>\$14,798.66</u>

OLD PEOPLE'S HOME.

CLOSE OF FISCAL YEAR, ENDED SEPTEMBER 30, 1892.

DISBURSEMENTS.

Balance of inmates' accounts from 1891 report,	.	.	\$10,136.68
Paid executive committee's orders for			
General expenses,	.	.	13,391.36
New laundry,	.	.	1,750.00
Bills payable, all notes paid,	.	.	6,000.00
Expense, P. M. Hastings, M.D., supervisor, one-half salary,			
7 months, to May 1, 1892,	.	.	\$291.66
A. T. Bissell, commission on sale			
Stebbins property,	.	.	34.00 325.66
Savings banks,			
Deposited to credit of various inmates,	.	.	1,194.68
Trust fund account,			
Note of Charles N. Loomis,	.	.	150.00
Estate John H. Most, paid record fee,	.	.	1.00
Balance, cash on hand,	.	.	1,393.09

\$34,342.47

OLD PEOPLE'S HOME.

CLOSE OF FISCAL YEAR, ENDED SEPTEMBER 30, 1892.

LIABILITIES.

Fund account, No. 2,	.	.	.	.	\$2,458.18
Anna L. Franklin fund,	.	.	.	.	1,000.00
Inmates' accounts,	.	.	.	.	11,340.48

\$14,798.66

SUPERINTENDENT'S REPORT.

*The OLD PEOPLE'S HOME**in account with LEANDER HALL, Sup't.*

DR.	CR.
1891-92. To am't paid for	1892. By amount received from
Bread stuffs, \$645.20	W. W. Jacobs, Treas., \$13,391.36
Butter and Eggs, 883.74	Board of Inmates, 1,204.58
Fruits and Vegetables, 643.88	Rent of room to Nurses, 210.00
Fuel, 1,589.02	Board of Nurses, 321.11
Furniture, 64.83	
Gas, 669.88	
Groceries, 794.03	
Ice, 71.70	
Meat, Fish, and Fowl, 3,498.33	
Medicine, 33.12	
Milk, 728.75	
Miscellaneous, 403.00	
Printing, etc., 3.00	
Repairs and Improvements, 829.10	
Salaries, 2,277.23	
Washing and Soap, 64.55	
Water, 192.00	
Total Current Expenses, \$13,391.36	
Am't paid Treasurer, 1,735.69	
\$15,127.05	\$15,127.05

TERMS OF ADMISSION.

ARTICLE I. Applicants for admission to the Old People's Home must be citizens of the County of Hartford, persons of good character, not under sixty years of age, and in reduced circumstances.

ARTICLE II. The preliminary conditions of admission for permanent inmates will be as follows, viz.:

Applicants between the ages of sixty and seventy years will be required to pay \$400, and those over seventy years of age, \$300 for a separate room.

This admission fee must be paid to the Treasurer of the Hospital upon the entrance of applicant.*

Applicants for temporary accommodations in the Home will be charged such a sum as the Executive Committee may find necessary to cover the expenses of board, washing, etc.

Such occupancy will be limited at the discretion of said committee.

ARTICLE III. A probationary period of four months will be required before the applicant can be confirmed as a permanent inmate of the Home.

ARTICLE IV. Applications for admission must be made to the Executive Committee, and a full statement of the circumstances of the applicant must be given.

ARTICLE V. Every person admitted as a permanent inmate shall sign and execute, in a book kept by the Superintendent, the agreement and conveyance hereto annexed.

ARTICLE VI. No article of furniture shall be brought into the institution without the consent of the Executive Committee; such articles as shall be admitted shall be and become the absolute property of the Hospital.

ARTICLE VII. Form of agreement: The undersigned having been received as a permanent inmate and beneficiary

* If from any cause an individual is not confirmed, the amount paid will be refunded, after deducting the price of the board, etc., while a resident of the Home.

of the Old People's Home, a department of the Hartford Hospital, in the city of Hartford, now, in consideration of the benefits assured to me as such beneficiary and of my admission thereto, I do hereby assent to and promise compliance with the rules and regulations of such Home, as they exist at the date hereof, and as the same shall be made, amended, or modified thereafter ; and I do hereby sell, assign, set over, and convey unto the Directors of the Hartford Hospital, and their successors and assigns forever, all the goods, chattels, effects, and personal property of every kind, and all real estate, wheresoever the same may be situated, which I now possess, or to which I shall hereafter become entitled during my residence at the Home ; and I hereby make and appoint the Treasurer of the Hartford Hospital, and his successor and successors in office, my attorney and trustee irrevocable, with full power and authority to demand, receive, collect, and recover said property, effects, and claims for the purposes hereinbefore and hereinafter stated, to pay and deliver the same to said Home. It is also understood that I may at any time terminate my connection with the Home, and that the Executive Committee of the Hospital may, in their discretion, at any time, require me to do the same. It is, however, understood that, upon payment to said Hospital of such sum or sums of money as fixed by the Executive Committee as a fair compensation for my support, and charges against me to the full extent, and for all the term in which I shall have been an inmate of said Home, then I am to receive from said Hospital such property as I have transferred to it, or the proceeds of such property as the Executive Committee may have disposed of.

HOUSE RULES.

ARTICLE I.—DUTIES OF MATRON.

The Matron shall have the general care of the domestic affairs of the Home and of the inmates, subject to the direction of the Superintendent and Executive Committee. No

person will be permitted to interfere or find fault with the Matron; but if any inmate has cause for complaint, application must be made to the Executive Committee, who will receive any statement and take action thereon as they may think proper. She shall see that all inmates, who are able to do so, shall take their meals at the family table, and that proper order is preserved; also, that suitable food shall be provided for the sick.

ARTICLE II.—DUTIES OF INMATES.

Any inmate wishing to leave the house to visit friends or otherwise must apply to the Matron for her assent, stating where he or she intends going, and when he or she expects to return. Every inmate who is able to do so will be required to keep his or her room neat and clean, and the furniture in order, and make themselves generally useful. Any inmate who shall be guilty of circulating reports injurious to the reputation of the Home, criticising and finding fault with the management, creating dissatisfaction or disturbance among its inmates, shall be admonished, and on repetition of such offense shall hereby forfeit his or her privileges, and be dismissed from the institution. It shall not be allowable for the male or female inmates to visit each other's rooms, but they may meet in the corridors, which will always be open to them.

ARTICLE III.—VISITORS.

The friends of inmates, and the public generally, may visit the Home on Thursday, between the hours of 10 and 12 o'clock A. M., and from 2 to 4 o'clock P. M. At other times visitors will be admitted only by permission of the Superintendent or Matron.

ARTICLE IV.—PHYSICIANS.

No physician except those connected with the Hospital will be allowed to attend the inmates, except by permission of the Chairman or some member of the Executive Committee.

ARTICLE V.

No spirituous liquors shall be brought into the Home, nor shall any be used by any inmate, unless the same be prescribed by the attending physician, and placed in charge of and administered by the Matron.

ARTICLE VI.

The lights shall be extinguished in the rooms of the inmates at nine in the evening, and in the halls and corridors at 10 P. M., unless the Matron, for good reasons, direct otherwise.

ARTICLE VII.

Upon the death of an inmate, the Matron shall immediately notify the Executive Committee, and also the friends, as far as their address may be ascertained. Should the funeral take place from the Home, the arrangements shall be uniform in all cases, and shall be made under the direction of the Executive Committee. The friends of the deceased may defray the expenses, or remove the remains elsewhere for interment by permission of the Superintendent.

ARTICLE VIII.

Willful violation of any of these rules or regulations by any of the inmates shall render such person liable to dismissal, in which case he or she shall not be entitled to a return of any moneys paid by such individual; such clothing or other personal effects belonging to the person dismissed may be taken. The Executive Committee may make such dismissal. Persons expelled will not be permitted to visit the Home under any circumstances. In all matters of difference between the inmates the decision of the Superintendent shall be conclusive, until modified or reversed by the Executive Committee. The orders of the Superintendent and Matron in all matters relating to the domestic government of the family must be observed by all inmates; such orders must be reported to the Executive Committee.

FORM OF BEQUEST TO THE OLD PEOPLE'S HOME.

ITEM. I give and bequeath to the HARTFORD HOSPITAL, in the city of Hartford, the sum of dollars, to be paid by my executors out of my real or personal estate, as soon as the settlement of my affairs will permit, to the Treasurer of the said institution for the time being, in trust, to be applied by the directors thereof to the humane purposes of the department in said institution known and designated as the Old People's Home.

NOTE.

A gift of \$5,000 will endow a room in perpetuity, the donor having the privilege of nominating its occupant.

Any person wishing to offer gifts or furnish entertainments for the inmates of the "Home" must receive permission from the Superintendent or Matron.

STATE OF CONNECTICUT.

ANNUAL REPORT

—OF—

The Connecticut Agricultural
Experiment Station

For 1892

Printed by Order of the General Assembly.

NEW HAVEN:

TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

1893

OFFICERS AND STAFF FOR 1892.

STATE BOARD OF CONTROL.

Ex-officio.

HIS EXC. MORGAN G. BULKELEY, *President.*

Appointed by Connecticut State Agricultural Society:

Term expires.

HON. E. H. HYDE, Stafford, *Vice-President.*

July 1, 1894.

Appointed by Board of Trustees of Wesleyan University:

PROF. W. O. ATWATER, Middletown.

1894.

Appointed by Governor and Senate:

EDWIN HOYT, New Canaan.

1895.

H. L. DUDLEY, New London.

1893.

EXECUTIVE COMMITTEE.

Appointed by Board of Agriculture :

{ T. S. GOLD, West Cornwall.

1895.

Appointed by Governing Board of Sheffield Scientific School :

{ W. H. BREWER, New Haven, *Secretary and Treas.*

1893.

Ex-officio.

{ S. W. JOHNSON, New Haven, *Director.*

Chemists.

E. H. JENKINS, PH.D., *Vice-Director.*

A. L. WINTON, PH.B.

T. B. OSBORNE, PH.D.

A. W. OGDEN, PH.B.

CLARK VOORHEES, PH.B.*

WORTHINGTON SMITH, B.A.†

Mycologist.

WILLIAM C. STURGIS, PH.D.

Stenographer and Clerk.

MISS F. M. BIGELOW.

In charge of Buildings and Grounds.

CHARLES J. RICE.

Laboratory Helper.

HUGO LANGE.

* Till Oct. 1st.

† From Oct. 1st.

ANNOUNCEMENT.

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION was established in accordance with an Act of the General Assembly approved March 21, 1877, "for the purpose of promoting Agriculture by scientific investigation and experiment."

The Station is prepared to analyze and test fertilizers, cattle-food, seeds, milk, and other agricultural materials and products, to identify grasses, weeds, useful or injurious insects, moulds, blights, mildews, etc., and to give information on various subjects of Agricultural Science, for the use and advantage of the citizens of Connecticut.

The Station makes analyses of Fertilizers, Seed-Tests, etc., etc., for the citizens of Connecticut, without charge, provided—

1. That the results are of use to the public and are free to publish.
2. That the samples are taken from stock now in the market, and in accordance with the Station instructions for sampling.
3. That the samples are fully described and retail prices given on the Station "Forms for Description."

The officers of the Station will take pains to obtain for analysis samples of all the commercial fertilizers sold in Connecticut; but the organized coöperation of farmers is essential for the full and timely protection of their interests. Granges, Farmers' Clubs and like Associations can efficiently work with the Station for this purpose, by sending in duly authenticated samples early during each season of trade.

All other work proper to the Experiment Station that can be used for the public benefit will be done without charge. Work for the use of individuals will be charged for at moderate rates. The Station will undertake no work, the results of which are not at its disposal to use or publish, if deemed advisable for the public good.

Results of analysis or investigation that are of general interest will be published in the Bulletins, of which copies are sent to each Post Office in this State, and to every citizen of the State who applies for them. These results will be summed up in the Annual Reports made to the Governor.

It is the wish of the Board of Control to make the Station as widely useful as its resources will admit. Every Connecticut citizen who is concerned in agriculture, whether farmer, manufacturer, or dealer, has the right to apply to the Station for any assistance that comes within its province to render, and the Station will respond to all applications as far as lies in its power.

☞ Instructions and Forms for taking samples, and Terms for testing Fertilizers, Seeds, etc., for private parties, sent on application.

☞ Parcels by Express, to receive attention should be *prepaid*, and all communications should be directed, *not to any individual officer*, but simply to the

AGRICULTURAL EXPERIMENT STATION,

NEW HAVEN, CONN.

☞ Station Grounds, Laboratories and Office are on Suburban st., between Whitney avenue and Prospect st., $1\frac{1}{2}$ miles North of City Hall. Suburban st. may be reached by Whitney ave. Horse Cars, which leave the corner of Chapel and Church sts. four times hourly, viz: on the striking of the clock and at intervals of fifteen minutes thereafter.

☞ The Station has Telephone connection and may be spoken from the Central Telephone Office, 118 Court st., or from Peck & Bishop's Office in Union R. R. Depot.

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REPORT OF THE TREASURER.

WM. H. BREWER, IN ACCOUNT WITH THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION, FOR THE FISCAL YEAR ENDING JUNE 30TH, 1892.

RECEIPTS.

From the Governor	\$6,000.00
" " Comptroller,	2,000.00
" " U. S. Treasurer,	7,500.00
Analysis Fees due last fiscal year, collected this year	1,155.26
" " " this " " " " " "	2,095.00
Miscellaneous Receipts	49.20
	<hr/> \$18,799.46

EXPENDITURES.

	State Acc't.	U. S. Acc't.	Total.
Salaries	\$4,855.00	\$6,764.98	\$11,619.98
General Laboratory Expenses	1,341.74		1,341.74
Mycological Expenses		232.64	232.64
Grass Investigation	790.50		790.50
Tobacco Investigation	398.35	34.76	433.11
Field Experiments		121.19	121.19
The Establishment, Repairs, Grounds, etc.	893.41		893.41
Gas	236.85		236.85
Water	147.00		147.00
Coal	472.50		472.50
Telephone	100.00		100.00
Printing	212.80	346.43	559.23
Stationery	124.36		124.36
Postage	105.18		105.18
Library	372.52		372.52
Collecting Fertilizers	276.03		276.03
Expenses of the Board	58.23		58.23
Unclassified Sundries	167.51		167.51
Balance on hand	747.48		747.48
	<hr/> \$11,299.46	<hr/> \$7,500.00	<hr/> \$18,799.46

FOR THE FISCAL THREE MONTHS ENDING SEPTEMBER 30TH, 1892.

RECEIPTS.

Balance from June 30th	\$ 747.48
From the State Comptroller	2,000.00
" " U. S. Treasurer	1,875.00
Analysis Fees due June 30, collected later	676.08
" " of current three months	35.00
Miscellaneous Receipts .....	.99
	<hr/> \$5,334.55

EXPENDITURES.

	State Acc't.	U. S. Acc't.	Total.
Salaries.....	\$1,247.50	\$1,775.00	\$3,022.50
General Laboratory Expenses.....	279.11	-----	279.11
Mycological Expenses.....	22.76	-----	22.76
Grass Investigation.....	334.31	65.69	400.00
Tobacco Investigation.....	-----	34.31	34.31
The Establishment. Grounds. Repairs, etc.....	774.58	-----	774.58
Gas.....	43.80	-----	43.80
Coal.....	550.00	-----	550.00
Telephone.....	25.90	-----	25.90
Printing.....	44.98	-----	44.98
Stationery.....	3.15	-----	3.15
Postage.....	1.50	-----	1.50
Library.....	86.74	-----	86.74
Expenses of the Board.....	1.50	-----	1.50
Unclassified Sundries.....	43.72	-----	43.72
	\$3,459.55	\$1,875.00	\$5,334.55

MEMORANDUM.

The accounts for the fifteen months ending September 30th, 1892, in accordance with the new dates for the State fiscal year, were audited December 2d by the State Auditors of Public Accounts.

Analysis Fees due the previous fiscal year, but which came into the hands of the treasurer during this fifteen months, are placed in this account. The Analysis Fees of fertilizers known or believed to be on sale after May 1st, and subject to the law concerning commercial fertilizers, coming to his hands after the beginning of the fiscal year, will be credited to the new account.

WM. H. BREWER, *Treasurer.*

REPORT OF THE BOARD OF CONTROL.

To His Excellency, the Governor of Connecticut:

The Annual Report of the Board of Control of the Connecticut Agricultural Experiment Station for the year ending November 1st, 1892, is as follows:

The "Act Concerning Commercial Fertilizers" which has been the law of this State now for ten years, requires the Director of this Station to cause one or more analyses of each fertilizer sold in the State for ten dollars or more per ton, to be made and published annually. Accordingly the Station has employed special deputies, Messrs. Dennis Fenn, of Milford and F. R. Curtiss, of Stratford, to collect and send to the Station samples of all the commercial fertilizers, coming within the law, that have been sold, offered or exposed for sale in Connecticut during the year. These gentlemen have made collections in more than 100 localities in 71 towns and villages, mostly from the stock on hand in the spring markets. Samples were collected to the number of 475 and represent 150 distinct brands. On these samples and on other fertilizers and manures about 300 analyses, mostly in duplicate, have been made. This branch of Station work has been in charge of Mr. Winton, assisted by Messrs. Ogden and Lange.

Work for the Dairy Commissioner in testing 13 samples of butter and oleomargarine, molasses and vinegar has been carried on as usual, by Dr. Jenkins and Mr. Winton, who have given their testimony in court on the call of the Dairy Commissioner.

The Station chemists have also made complete analyses of 18 samples of butter that were exhibited at the Dairy Convention held at Hartford in January, 1892, and 14 of cheese. In connection with Feeding trials, 88 detailed milk-analyses and not far from 1,000 fat determinations by the Babcock method have been executed.

On account of impaired health and by advice of his physician, after fifteen years of unremitted devotion to the interests of the Station, the Vice-Director applied to this Board for three months' leave of absence. This request was promptly granted, and early

in July, Dr. Jenkins went to Europe where after a short rest he has taken the opportunity to visit several of the most noted Experiment Stations and to familiarize himself with the results and methods of various recent and important researches in agricultural science and practice.

Dr. Jenkins is about to return quite restored in health we understand, and eager to resume his most useful labors in behalf of the farmers of Connecticut.

The several lines of work which have been pursued and the results attained are concisely set forth in the following memoranda.

In addition to the chemical work, already mentioned, 19 analyses of tobacco leaves have been made, including determinations of water, ash, ether extract, fiber, total nitrogen, nitric acid, nicotine, ammonia, starch and sugars.

Eight ash analyses of tobacco have also been made and one toxical examination.

The following investigations have been carried on during the year :

1. An experiment with milch cows to determine the effect on the yield and composition of the milk, of feeding rations having different nutritive ratios.

2. An experiment with tobacco, at Poquonock on land owned by the Connecticut Tobacco Experiment Association and with their coöperation.

3. A study of the chemical composition of different parts of the tobacco plant in different stages of growth.

4. A study of the chemical changes which take place in tobacco during the fermentation in the case.

5. A continuation of observations on the growth of maize continuously on the same land.

6. The Gunning-Kjeldahl method and a modification applicable in the presence of nitrates.

7. A study of the methods of cheese analysis.

Considerable time and labor have been devoted to various gatherings of farmers. At seven farmers' institutes, and the meetings of the Connecticut Dairymen's Association, the State Board of Agriculture, the Fruit Growers' Association, the Creamery Association, as well as at meetings of farmers' clubs, and several open Grange meetings, addresses have been made by one, oftener by two and sometimes by three of the Station staff.

The work done by Dr. T. B. Osborne and Clark G. Voorhees since Nov. 1, 1891, is as follows :

The investigation of the proteids of the flaxseed has been completed. The crystalline proteids of the Brazil nut, hemp seed, castor bean and squash seed have been carefully studied. The results of these investigations are in the course of publication in the American Chemical Journal. The proteids of wheat have been subjected to an exhaustive examination and the investigation is now substantially concluded.

Dr. Sturgis reports as follows :

The past season has been peculiarly unfavorable for mycological work. The extreme dryness has served to prevent, to a very large degree, the damage to crops usually caused by the growth of parasitic fungi.

The work which has occupied the larger part of the time, has been the application of certain scientific principles to the process of tobacco-curing. A year ago a quantity of half-cured tobacco was sent to us, which, during the process of curing, had become affected by an organic decay known among growers as "pole-sweat." The cause of this decay was readily ascertained to be two different species of germs, or bacteria. Pure cultures of these bacteria were made, and studied with a view to determine the conditions of warmth and moisture most suitable to their growth. These conditions were found to be, first a considerable degree of moisture, and secondly a temperature of from 70° to 90° Fahrenheit. Upon this basis it was decided to construct, on a piece of land at Poquonock which was used by the Station for certain experiments in the fertilization of tobacco, a barn which should be provided with a more satisfactory system of natural ventilation than that at present in use, and to which some method of artificial heat could be adapted.

That these two important factors in the curing of tobacco—heat and moisture, could be easily and cheaply regulated by the methods proposed, was abundantly proved, but owing to the extreme dryness of the curing season this year, no danger from "pole-sweat" was to be apprehended, and the artificial heat was not employed. Its applicability however, has been proved, and it is probable that another season will render its use for practical purposes more obvious.

During the Summer an extensive experiment was conducted upon four acres of potatoes in the neighborhood of Norwich. It

was designed to test the efficacy of certain fungicides other than the Bordeaux mixture, in the prevention of "potato blight." Here again the dry weather was unfavorable to the fungus, and few traces of it were found even on the unsprayed portions of the field.

The vines however remained green much longer on that portion treated with Bordeaux mixture than on those where other fungicides were used, and the experiment demonstrated the fact that none of the fungicides used was superior to Bordeaux mixture in cheapness or facility of employment.

Experiments conducted in previous years at Milford for the prevention of the "leaf-blight" of Quince, were continued this year, and were useful again in proving the advantages attending the use of Bordeaux mixture.

One important fact seems proved by these series of experiments. Heretofore the Bordeaux mixture has been prepared as concentrated as was compatible with the safety of the foliage upon which it was used. This year in my experiments I used it only half as strong, and obtained equally good results as far as the destruction of the fungus was concerned, and of course at a much reduced cost.

Finally, a disease affecting Asters and other related flowering plants has been studied. The disease has been found to be due, at least in part, to microscopic nematode worms which infest the roots. Experiments are now in progress to discover, if possible, some substance which, combined with special methods of cultivation, will lessen the ravages of these root-infesting pests. The results of these experiments will be published in full before another season.

On the whole it may be said that, notwithstanding a season very unfavorable for the study of fungous diseases, the work of this department has been productive of good results during the past year, results which at least offer a guide to the future work.

A detailed account of all the work above referred to will be found in the Report of the Director, now in course of preparation.

All which is respectfully submitted.

WILLIAM H. BREWER,

Secretary.

New Haven, Conn., Nov. 1, 1892.

REPORT OF THE DIRECTOR.

The following pages contain a detailed account of the work of this Station during the past year so far as it is sufficiently advanced to justify its publication.

In the discussion of commercial fertilizers it is found necessary to reprint annually certain statements regarding the fertilizer law and the analysis and valuation of fertilizers, to answer the questions which are constantly addressed to the Station on these subjects.

EXPERIMENTS IN GROWING TOBACCO WITH DIFFERENT FERTILIZERS. SEASON OF 1892.

ORGANIZATION OF THE CONNECTICUT TOBACCO EXPERIMENT COMPANY.

In the winter of 1891-92 a Farmers' Institute was held at Windsor under the management of the State Board of Agriculture.

At this meeting the subject of tobacco growing and curing was quite fully discussed both by the tobacco growers and by the representatives of the Conn. Experiment Station.

It was the opinion of those who spoke that the quality of Connecticut tobacco might be greatly improved by proper fertilization and by improved methods of handling the crop after cutting, and that to this end carefully made experiments on the fertilization of tobacco and the methods of curing and fermenting were urgently needed.

The Station representatives pledged their full coöperation in any work of the sort which might be undertaken.

As a result of these and other subsequent discussions a considerable number of tobacco growers organized a joint stock company under the corporate name The Connecticut Tobacco Experiment

Company, "For the purpose of conducting and carrying on the business of an experiment in the culture and cure of tobacco, the same to be conducted and carried on in connection with and under the supervision of the Conn. Agricultural Experiment Station. The place where the said business is to be carried on is Poquonock, in the town Windsor," Conn.

The stockholders elected the following officers:—President, S. O. Griswold; Vice-President, Eugene Brown; Secretary, E. S. Hough; Treasurer, L. R. Lord; Board of Management, H. H. Ellsworth, Eugene Brown, J. A. DuBon, H. W. Alford, J. G. Thrall, A. E. Holcomb and R. D. Case. An executive committee was also chosen consisting of H. H. Ellsworth, H. W. Alford and J. A. DuBon, to whom was committed the practical management of the experiment itself.

A stock subscription book was opened and the Company was soon able, from the proceeds of stock sales, to purchase one and one-half acres of land, judged to be perfectly adapted to its purposes, and to arrange for the building of a barn large enough to hold the crop of two acres of tobacco. The land was at once cleared and prepared for planting.

The company's committee and the representatives of this Station after full discussion agreed upon this

GENERAL PLAN OF EXPERIMENT.

1. The following experiments should be carried out on the same land for at least five years in succession.

2. While the quantity of crop should be accurately determined, very special attention should be given to the judgment of its quality for cigar wrappers. This judgment should be given by men of large practical experience in the trade in leaf tobacco, and the samples should be so submitted that the judges should have no knowledge of any particulars regarding the manner in which the separate lots of leaf were raised.

3. The final judgment on its quality should be made after the leaf has been fermented in the usual way, and the whole crop rather than small samples from each crop should be fermented together.

4. The following questions are those which, as far as circumstances permit, should receive immediate attention:

a. What is the effect on quantity and quality of leaf of larger applications of cotton seed meal than are commonly used as a fertilizer?

b. What is the comparative effect on quantity and quality of leaf, of applications of castor pomace containing the same amounts of nitrogen as the cotton seed meal used in experiments under *a*?

c. If a heavy application of nitrogen in form of castor pomace proves injurious to the leaf, can the injury be lessened or prevented if a half of this quantity of nitrogen is supplied by castor pomace and the other half by nitrate of soda?

d. What are the comparative effects on quality and quantity of leaf of applications of equal quantities of potash in the following forms: Cotton hull ashes, high grade sulphate of potash, the same with lime, double sulphate of potash and magnesia, the same with lime, pure carbonate of potash, and pure nitrate of potash?

e. Is it possible to absolutely prevent "pole-burn" and to cure the crop perfectly on the stalk, by the use, in very damp "muggy" weather, of artificial heat simply as a means of ventilating and partly drying the air of the barns?

The company's committee requested the Station to plan the construction of the barn and the arrangement of the experiment, to take the general charge of it, to make and record all weights and to preserve and publish the results with suitable discussion of them.

The committee were fortunate to secure the services of Mr. John A. DuBon who planted, cultivated, harvested, cured and sorted the crop in coöperation with the Station.

Mr. DuBon did all this in the most thorough and efficient way and the success which has been attained this year in spite of the late organization of the company and the consequent hurry at planting time is largely due to his untiring work and careful attention to all the vexatious details incident to a somewhat extensive and carefully executed experiment; details which can only be fully understood by one who has had experience with them.

THE EXPERIMENT FIELD.

The soil of this field is like much of the upland tobacco soil of the Connecticut valley and may be described as a very fine light sandy loam. Its chemical and mechanical examination will be noticed in another place.

For five or six years the field had scarcely been fertilized or cultivated at all and tobacco had not been raised there for a very long term of years. When bought it was covered with a neg-

lected growth of "poverty grass" (*Andropogon scoparius*), blackberry vines, and wild growth of various sorts. After careful plowing and harrowing, the field was measured by the Station into twenty-three plots, each of them 27 feet wide and $80\frac{1}{2}$ feet long, containing $2173\frac{1}{2}$ square feet or $4\frac{1}{2}$ square feet less than one twentieth of an acre. The plots were separated by a space $3\frac{1}{2}$ feet wide and their boundaries were marked by stout chestnut posts.

FERTILIZERS.

The fertilizers were all sampled and analyzed by the Station. The raw materials used contained the following percentages of nitrogen, phosphoric acid and potash.

	Nitrogen.	Available Phosphoric Acid.	Potash.
Nitrate of Soda	15.9	---	---
Nitrate of Potash	13.8	---	44.9
Cotton Seed Meal	7.0	3.0	1.8
Castor Pomace	5.3	1.7	1.0
Cooper's Bone Dust	1.6	29.2	---
Cotton Hull Ashes	---	7.0	20.9
High Grade Sulphate of Potash	---	---	50.6
Double Sulphate of Potash and Magnesia	---	---	25.7
Carbonate of Potash	---	---	54.1

The quantities of chemicals for each plot were accurately weighed by the Station representative, mixed thoroughly under his supervision, bagged and labeled in such a way as to give no clue to any other person as to the contents of the bags or as to the plots for which they were intended.

The bags were carried to the several plots under his direction and their contents were sowed on the plots in his presence.

Certain manufacturers of tobacco manures subscribed to the stock of the company and requested that their manures as submitted by them might also be included in the experiment, subject to the same treatment as the other plots. The following persons and companies thus joined in the experiment: H. J. Baker & Bro., N. Y., Bowker Fertilizer Co., Boston, F. Ellsworth, Hartford, Mapes' Formula & Peruvian Guano Co., N. Y., L. Sander-son, New Haven.

The mixed fertilizers supplied by these manufacturers were also weighed, sampled and analyzed by the Station with the following results:

ANALYSES OF MIXED FERTILIZERS.

	Baker's Tobacco Manure.	Baker's A A Phosphate.	Stoekbridge Tobacco Manure.	Bowker's Fertilizer.	Ellisworth's Starter.	Ellisworth's Foundation.	Mapes' Tobacco Manure W. B. Normal.	Mapes' Tobacco Manure W. B. with extra Pot-ash.	Mapes' Tobacco Manure W. B. with extra Pot-ash and Phosphoric Acid.	Mapes' Starter.				Sanderson's Formula B.
	Plot Q	Plot Q	Plot R	Plot S	Plot T	Plot T	Plot U	Plot V	Plot W	Plot U	Plot V	Plot W	Plot X	
Nitrogen as Nitrates	---	.34	1.65	2.72	7.38	---	1.53	1.42	2.19	.28	.25	.28	1.28	
“ as Ammonia	3.05	.96	---	---	---	---	3.23	2.86	2.58	.51	.51	.51	1.95	
“ Organic	1.34	1.57	3.31	2.75	1.11	5.12	1.34	1.69	---	2.14	2.11	2.08	2.45	
TOTAL NITROGEN	4.39	2.87	4.96	5.47	8.49	5.12	6.10	5.97	6.21	2.93	2.87	2.87	5.68	
Soluble Phosphoric Acid	4.61	9.01	trace	trace	4.72	trace	trace	trace	trace	7.58	7.55	7.62	3.58	
Reverted “	1.08	2.86	4.08	2.95	2.41	4.52	3.97	3.63	4.00	3.77	3.77	3.46	5.12	
Insoluble “	trace	.22	6.26	4.00	89	1.79	2.34	1.74	2.19	1.83	1.69	1.87	.86	
TOTAL PHOSPHORIC ACID	5.76	12.09	10.34	6.95	8.02	6.31	6.31	5.37	6.19	13.18	13.01	12.95	9.56	
Potash as Muriate	.89	2.60	1.53	2.44	---	---	1.20	1.47	.98	.70	.67	.53	.28	
“ as Sulphate	10.79	---	4.77	7.33	2.86	5.26	10.11	13.92	12.32	2.69	2.69	2.97	10.29	
TOTAL POTASH	11.68	2.60	6.30	9.77	2.86	5.26	11.31	15.39	13.30	3.39	3.36	3.50	10.57	
Chlorine	.67	3.18	1.15	1.83	trace	trace	.90	1.10	.74	.53	.50	.40	.21	

These mixtures differ in some cases from the regular brands put on the market by the manufacturers. *The object is not by any means to make a competitive test of the regular brands of tobacco manures*, but rather to test the value of certain mixtures in order to afterwards alter the composition of the regular brands if the results of these trials shall make it seem advisable.

All the fertilizers were very carefully and evenly sown when no wind was blowing, under the personal direction of Mr. DuBon and the Station representative. The plots were immediately harrowed by Mr. DuBon, each by itself to avoid carrying fertilizer from one plot to the next. The whole piece was then "rowed out" in the usual way, the rows running east and west.

The following statement shows what fertilizers were put on each plot, their cost and the quantities of nitrogen, phosphoric acid and potash contained in them, *expressed in pounds per acre*.

Name of Plot.	FERTILIZERS APPLIED. Pounds per Acre.	Cost per Acre.	Fertilizer contains Pounds		
			Nitrogen.	Phosphoric Acid.	Potash.
A	1500 Cotton Seed Meal 1500 Cotton Hull Ashes	\$50.20	105	150	341
B	2000 Cotton Seed Meal 1500 Cotton Hull Ashes	57.25	140	165	350
C	2500 Cotton Seed Meal 1500 Cotton Hull Ashes	63.75	175	180	359
D	3000 Cotton Seed Meal 1500 Cotton Hull Ashes	70.50	210	195	368
E	1980 Castor Pomace 1500 Cotton Hull Ashes	50.79	105	139	334
F	2640 Castor Pomace 1500 Cotton Hull Ashes	57.72	140	150	340
G	3300 Castor Pomace 1500 Cotton Hull Ashes	64.65	175	161	347
H	4000 Castor Pomace 1500 Cotton Hull Ashes	72.00	212	173	354
	2640 Castor Pomace 1500 Cotton Hull Ashes 220 Nitrate Soda* 220 " " †	68.72	210	150	340

* Applied between rows at time of first cultivation.

† Applied between rows at time of second cultivation.

Name of Plot.	FERTILIZERS APPLIED. Pounds per Acre.	Cost per Acre.	Fertilizer contains Pounds		
			Nitrogen.	Phosphoric Acid.	Potash.
J	2640 Castor Pomace 1500 Cotton Hull Ashes 440 Nitrate Soda†	\$68.72	210	150	340
K	1500 Cotton Seed Meal 1220 Double Manure Salt 360 Cooper's Bone	43.95	110	150	341
L	1500 Cotton Seed Meal 1220 Double Manure Salt 360 Cooper's Bone and 300 Lime	44.70	110	150	341
M	1500 Cotton Seed Meal 620 High Grade Sulphate of Potash 360 Cooper's Bone	42.70	110	150	341
N	1500 Cotton Seed Meal 620 High Grade Sulphate of Potash 360 Cooper's Bone and 300 Lime	43.45	110	150	341
O	1500 Cotton Seed Meal 580 Carbonate of Potash 360 Cooper's Bone	74.95*	110	150	341
P	760 Nitrate of Potash 500 Cooper's Bone	66.47*	110	146	341
Q	2020 Baker's A. A. Superphosphate 3920 " Tobacco Manure	----	230	466	510
R	2000 Stockbridge Tobacco Manure	----	99	207	126
S	4000 Bowker's Tobacco Fertilizer	----	219	278	391
T	900 Ellsworth's "Starter" 2700 " "Foundation"	----	215	238	168
U	501 Lime 501 Mapes' Starter 2601 " Tobacco Manure W. B.	----	173	230	312
V	501 Lime 501 Mapes' Starter 2601 " Tobacco Manure Special	----	170	205	418
W	501 Lime 501 Mapes' Starter 2601 " Tobacco Manure Special	----	176	227	364
X	6080 Sanderson's Formula B.	----	345	581	643

* If bought in ton lots not chemically pure the cost would be considerably less.

† Applied between rows at time of first cultivation.

THE PLANTS AND PLANTING.

The plants were from seed raised by Mr. DuBon in 1890, of the so-called "Havana seed." It may be said for the benefit of those unfamiliar with the local meaning of this term, that it has been a practice to obtain seed from the island of Cuba, plant it in Connecticut and raise seed year after year from it. The plants in the first years are too small to suit the demands of our market but they increase in size and after the first four generations of plantings the size becomes satisfactory and seed saved in one year may be used for the planting of the next six to ten years. Seed so obtained is called "Havana" or "Conn. Havana" seed. The special variety, used by Mr. DuBon for the last ten years, is called the "Hubbard." He has generally raised the seed each year, though at two different times he has used one year's seed for the three next years' planting.

The rows were three feet and a half apart, eight rows in a plot, and the plants were accurately set seventeen inches apart, making about 8700 to the acre.

The plants were set out by Mr. DuBon and his men on June 8th.

NOTES DURING THE GROWING SEASON.

Following is Mr. DuBon's record kept during the months that the crop was growing:

June 8.—Planted the whole piece to-day.

June 9.—Very heavy rain covering many of the plants with earth.

June 11.—Cut worms are destroying many of the plants. Reset 2500 plants.

June 20.—Plots D, G and L very slow to start growing. Some plants on them appear to be dying as if scorched by the fertilizer. Plots A, H, K, N start best of all. R and S next. U and V next.

July 2.—Plot P is the smallest of all; color yellowish green. D and G are a little backward.

July 3.—1000 more plants reset.

July 5.—11 pounds nitrate of soda applied on plot I, and 22 pounds on plot J.

- July 10.—Tobacco on plot P is still very small. Color yellowish green, but is growing darker. Tobacco on O is also very small. That on Q is the largest of all. The tobacco on B, C, D, F, G, H is very uneven on account of the attack of cut-worms.
- July 17.—Tobacco on P is still smallest of all and O comes next. Color of both pale green. Tobacco on Q is largest of all and very dark green. R and S have the next largest tobacco and of good color.
- July 25.—Applied 11 pounds of nitrate of soda to plot I. Tobacco on Q very much larger than on other plots. P still the smallest and light in color.
- July 26.—Commenced topping. Tobacco on Q was nearly all topped at first topping. On P only a few plants topped. On O one-tenth of the plants topped. On H and L one-fourth of them topped. On N and T four-fifths of them topped. I and J are improving very fast. The weather is very dry, but on those two plots the tobacco looks as if it had all the moisture it needed, while the rest of the piece is somewhat parched.
- July 31.—A nice, quiet rain has fallen.
- Aug. 6.—Finished topping.
- Aug. 23.—Tobacco on P is still the smallest. Color light green. That on B is next smallest, O comes next. The tobacco on Q is the largest of all, H next largest, then J, then I, and then S. All are ripe except P. O has not improved in the last ten days.
- Aug. 29.—Commenced cutting and cut fourteen plots.
- Aug. 30.—The remaining nine plots were cut and all the crop was hung up to pole-cure. Most of the crops were slightly overripe except P, which is still somewhat green. The quality of tobacco on plots A, E, M and N has been injured by its getting over ripe. It has lost somewhat its elasticity, "life." This should be borne in mind in judging of its quality.

HARVEST AND CURING.

The delay in cutting was due to the delay of workmen in finishing the fittings of the curing barn.

Representatives of the Station were present at the cutting and each lath on which the stalks were strung was marked with the number of the plot, the total number of laths from each plot was noted, and all the tobacco from each plot was hung together in the barn. There were three "bents" for hanging tobacco, one over another, and a third of the tobacco from each plot was hung on each of these, so that there should be no difference in the exposure of the tobacco of different plots. The barn was kept securely locked during the curing time.

It should be said for the information of those unfamiliar with the process of tobacco curing in this State, that the leaves are cured on the stalk, whole plants being cut and strung on laths (six or seven stalks to a lath), by piercing the stalk near the butt with a "spear" which is slipped on the end of the lath. The laths rest by their ends on the bents in the barn and the stalks hang tip downwards.

The barn was fitted with furnaces to supply artificial heat in case pole-burn was feared; but the weather was so favorable for curing that they were not used.

On November 15 during a favorable "tobacco storm," all of the tobacco was taken down on the laths, and on November 16 and 17 the tobacco was stripped from the stalks and bundled. It was labeled and weighed by the Station representative and hauled to Mr. DuBon's sorting house.

The stalks from each plot will be cut small and returned to the plots from which they came.

As the tobacco was taken off the laths the latter were recounted and their number in each case tallied exactly with the number noted at cutting time.

SORTING.

The sorting was done by Mr. DuBon and a skilled laborer under his supervision. The representative of the Station was present during the whole time and made and recorded all weights.

The yield of each plot was sorted into long wrappers, short wrappers, top leaves and seconds.

The sorting began in the afternoon of November 28 and was finished at noon on December 6.

SAMPLING AND CASING.

On the afternoon of December 6 the sorted tobacco was teamed to the public warehouse of Mr. L. B. Haas, 150 State street, Hartford. On the 7th it was sampled and its quality examined by Mr. Haas and Mr. James McCormick. Mr. Haas has been for many years a dealer in leaf tobacco and is believed to be one of the best judges of leaf tobacco in the country. Mr. McCormick has also had a very wide experience in judging of tobacco crops.

On the 7th and 8th of December the tobacco was cased down under Mr. Haas' and Mr. McCormick's direction for fermentation, in the presence of the Station representative. The cases, measuring three feet each way, were lined on bottom, sides and top with either seconds or top leaves so that the wrappers should all receive the full "sweat." The wrappers of different plots were separated by strings and marked with labels so that they can certainly be identified when the cases are opened.

The contents and weights of the cases are here recorded:

Mark.	Wrappers from plots marked.	Lined with	Gross.	Tare.	Net.
Case No. 1-----	19-20-21	103 lbs. top leaves	393	93	300
" 2-----	22-23-14	97 " "	383	86	297
" 3-----	6-15-16	82 " "	386	86	300
" 4-----	17-18-2-13	95 " seconds	384	86	298
" 5-----	10-11-12-3	98 " "	386	86	300
" 6-----	4-3a-9-8	111 " "	399	86	313
" 7-----	7-1-5	114 " "	399	85	314
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The crops from the different plots are designated by numbers and it is believed that only two persons understand to which particular plots these numbers refer.

THE TABULATED RESULTS.

The following tables present in detail all the data which have been gathered to assist in forming a judgment of the character of the crop and are followed by explanations and discussion of these data. *It must, however, be always borne in mind that no final judgment can be given as to the relative merits of these crops till they have been fermented and are ready to be rolled into cigars and put on the market.*

WEIGHTS OF THE BARN CURED LEAVES FROM $\frac{1}{20}$ ACRE.

Plot.	Gross Weight of Leaves.	Weight after Sorting.				Waste and Shrinkage.	Net Weight of Sorted Tobacco.
		Long Wrappers.	Short Wrappers.	Top Leaves.	Seconds.		
A	90	38 $\frac{1}{2}$	17 $\frac{1}{2}$	12 $\frac{1}{2}$	18	3 $\frac{1}{2}$	86 $\frac{1}{2}$
B	87 $\frac{1}{2}$	35 $\frac{3}{4}$	20 $\frac{3}{4}$	11 $\frac{1}{2}$	16	3 $\frac{3}{4}$	83 $\frac{3}{4}$
C	95	42 $\frac{3}{4}$	17	12 $\frac{1}{2}$	18 $\frac{1}{2}$	4 $\frac{1}{2}$	90 $\frac{1}{2}$
D	99	54 $\frac{1}{4}$	15	8 $\frac{1}{2}$	16	5 $\frac{1}{4}$	93 $\frac{3}{4}$
E	96 $\frac{1}{2}$	36 $\frac{3}{4}$	18 $\frac{3}{4}$	19 $\frac{1}{2}$	19	2 $\frac{3}{4}$	93 $\frac{3}{4}$
F	97	38	21	14 $\frac{1}{2}$	17 $\frac{3}{4}$	5 $\frac{3}{4}$	91 $\frac{1}{4}$
G	93 $\frac{1}{2}$	44 $\frac{3}{4}$	13 $\frac{3}{4}$	10 $\frac{3}{4}$	18 $\frac{3}{4}$	5 $\frac{1}{2}$	88
H	106 $\frac{3}{4}$	55 $\frac{1}{2}$	16 $\frac{1}{2}$	10 $\frac{1}{4}$	18	6 $\frac{1}{4}$	100 $\frac{1}{4}$
I	107 $\frac{1}{2}$	53	19 $\frac{1}{2}$	12 $\frac{1}{2}$	17	5 $\frac{3}{4}$	101 $\frac{1}{2}$
J	116	64	17	11 $\frac{1}{2}$	18	5 $\frac{1}{2}$	110 $\frac{1}{2}$
K	100 $\frac{1}{2}$	47 $\frac{3}{4}$	20 $\frac{3}{4}$	10	18 $\frac{1}{2}$	3 $\frac{1}{2}$	96 $\frac{3}{4}$
L	94 $\frac{1}{2}$	48 $\frac{1}{4}$	22 $\frac{3}{4}$	6 $\frac{1}{4}$	14 $\frac{1}{4}$	3	91 $\frac{1}{2}$
M	96	41 $\frac{3}{4}$	17 $\frac{3}{4}$	13 $\frac{1}{2}$	19 $\frac{1}{2}$	3 $\frac{1}{2}$	92 $\frac{1}{2}$
N	88 $\frac{1}{2}$	37 $\frac{1}{4}$	15 $\frac{1}{4}$	12 $\frac{1}{4}$	20 $\frac{1}{2}$	3 $\frac{1}{4}$	85 $\frac{1}{4}$
O	85	31 $\frac{1}{4}$	12 $\frac{1}{4}$	17 $\frac{1}{2}$	19	5	80
P	67	15 $\frac{3}{4}$	7	15	24 $\frac{3}{4}$	4 $\frac{1}{2}$	62 $\frac{1}{2}$
Q	119 $\frac{1}{2}$	63 $\frac{3}{4}$	22 $\frac{1}{2}$	13 $\frac{3}{4}$	14	5 $\frac{1}{2}$	114
R	91	36 $\frac{1}{4}$	18 $\frac{3}{4}$	14 $\frac{3}{4}$	18	3 $\frac{1}{4}$	87 $\frac{3}{4}$
S	108	56	20 $\frac{3}{4}$	12	14	5 $\frac{1}{2}$	102 $\frac{3}{4}$
T	113 $\frac{1}{2}$	58 $\frac{1}{2}$	16 $\frac{3}{4}$	14 $\frac{1}{2}$	20 $\frac{1}{2}$	3 $\frac{1}{2}$	110
U*	119	64 $\frac{1}{2}$	19 $\frac{1}{2}$	9 $\frac{3}{4}$	19 $\frac{3}{4}$	5 $\frac{1}{2}$	113 $\frac{1}{2}$
V*	93 $\frac{3}{4}$	44 $\frac{1}{2}$	14 $\frac{1}{2}$	11 $\frac{1}{2}$	18 $\frac{3}{4}$	4 $\frac{3}{4}$	89
W*	98 $\frac{1}{2}$	43 $\frac{3}{4}$	14 $\frac{1}{2}$	13 $\frac{3}{4}$	21 $\frac{1}{2}$	5	93 $\frac{1}{2}$
X	95 $\frac{1}{2}$	48 $\frac{1}{2}$	16 $\frac{1}{4}$	11	15 $\frac{1}{2}$	4 $\frac{1}{2}$	91 $\frac{1}{2}$

PER CENT. OF THE FOUR DIFFERENT GRADES.

Plot.	Long Wrappers.	Short Wrappers.	Total per cent. of Wrappers.	Tops.	Seconds.
A	45	20	65	14	21
B	43	25	68	13	19
C	47	19	66	14	20
D	58	16	74	9	17
E	39	20	59	21	20
F	42	23	65	15	20
G	51	16	67	12	21
H	56	16	72	10	18
I	52	19	71	12	17
J	58	16	74	10	16
K	49	22	71	10	19
L	52	25	77	7	16
M	45	19	64	15	21
N	44	18	62	14	24
O	39	16	55	21	24
P	25	11	36	24	40
Q	56	20	76	12	12
R	41	21	62	17	21
S	55	21	76	11	13
T	53	15	68	13	19
U	57	17	74	9	17
V	50	16	66	13	21
W	47	15	62	15	23
X	53	18	71	12	17

* Calculated to $\frac{1}{20}$ acre.

MR. DuBON'S NOTES WHILE SORTING.

- A Color dark, quality good.
 B Color very light, quality *extra*.
 C Color light, quality good.
 D Fine, color inclined to light, quality good.
 E Inclined to be dark, quality medium.
 F Color light, extra good quality.
 G Somewhat darker than C, quality good.
 H Not recorded.
 I Color very dark, quality good.
 J Color medium dark, quality good. Not as good as K.
 K Color light, good quality.
 L Color light, *extra* good quality.
 M Color medium light, quality fairly good.
 N Color light, quality fairly good, a little heavy.
 O Not recorded.
 P Color light, quality poor.
 Q Color dark, good quality, above medium weight.
 R Color a little dark, quality fair.
 S Color a little dark, quality good, size a little large.
 T Color dark, quality good, a little heavy.
 U Color a shade lighter than V, quality fair.
 V Color dark, poor quality, heavy.
 W Between plots V and U in quality and color.
 X Color dark, quality medium.

NUMBER OF LEAVES TO THE POUND.

	Long Wrappers.	Short Wrappers.		Long Wrappers.	Short Wrappers.
A	79	106	M	85	106
B	83	106	N	74	97
C	76	98	O	79	118
D	73	107	P	100	132
E	70	97	Q	65	92
F	79	101	R	98	118
G	75	101	S	54	95
H	71	107	T	62	82
I	75	89	U	61	86
J	67	81	V	76	109
K	68	96	W	64	103
L	80	112	X	62	97

COMPARATIVE CAPACITY OF HOLDING FIRE.*

	Long Wrappers.	Short Wrappers.	Calculated from the mean of both.
A	184	143	170
B	153	195	186
C	177	276	244
D	188	202	207
E	140	165	162
F	303	343	343
G	189	227	222
H	127	230	193
I	146	228	202
J	161	240	215
K	122	208	178
L	154	201	190
M	148	123	142
N	115	180	158
O	171	221	209
P	281	311	315
Q	132	100	121
R	189	190	200
S	129	202	173
T	100	160	141
U	131	138	142
V	126	147	145
W	110	138	100
X	103	130	124

APPEARANCE OF THE ASH OF LEAF WHEN BURNED AS A WRAPPER.

- A Light gray, a little muddy.†
 B Light gray, a little muddy.
 C Light, but darker than B or D. Inclined to flake slightly.
 D Light gray. Not muddy. Coals more than A and B. More flaky.
 The ashes of the above are a shade darker than those of the next four.
 E Light gray, rather more coal than A, B, C, D. Not flaky. Darker and muddier than G, H.
 F About like E.
 G Light gray, not quite as light as H. Very little muddy.
 H Light color. Very flaky. Very little muddy.
 I Not quite as light color but otherwise like H.
 J Quite light color. No flake. Little muddy. Much like N. Very little coal.
 K As light colored ash as any. Very little muddy. A little flaky.
 L Quite light color. Like K and M, but not as flaky as either.
 M Quite light. Little flake. No mud.
 N Light gray. Not as light as S. Smooth, no flake. A little muddy.

* For explanation see page 17.

† That is, having a light brownish shade.

- O About like N.
 P A dark gray ash. *Much* darker than any other. No flake.
 Q Very much like R, but a little more coal.
 R Little darker than S. Somewhat flaky. A little muddy.
 S Light as any except H. Slightly muddy.
 T Quite light. Bad coal.
 U Quite light. Very little flake.
 V Darker than W and X. Bad coal.
 W Light gray. No flake. More muddy than X.
 X Light gray. More flaky than W. Very slightly muddy.

DISCUSSION OF THE RESULTS.

A single year's experiment cannot be expected to show conclusive results. It is only when the results of one season with another, of wet and dry summers, cold and hot years are studied together that the general value of a particular kind of fertilizer or method of curing can be fairly judged.

Moreover the real value of a tobacco crop cannot be fairly determined when it is cured, stripped and sorted.

Dealers in leaf tobacco all agree that it is easy to be mistaken in judging of the real value of a crop for wrappers, before it has gone through the fermentation or "sweat" in the case.

But while for the reasons just given no final judgment on the crops is attempted by the chosen experts, we may briefly call attention to some of the facts shown in the tables already given.

NET WEIGHT OF THE SORTED TOBACCO AND COLOR OF CROP.

The weight alone of course is of the least value in judging of the crop. A very heavy crop of large, dark, thick leaves is much less valuable than even a small crop of fine, medium-sized, light colored leaves, provided the burning quality of both kinds is alike.

There were seven crops of over 2000 pounds per acre, namely :

Q	Baker's Fertilizer.....	2280	pounds.
U	Mapes' Fertilizer	2270	"
J	210 lbs. nitrogen; half as castor pomace and half as nitrate*..	2210	"
T	Ellsworth's Fertilizer	2200	"
S	Bowker's Two Ton Formula	2055	"
I	210 lbs. nitrogen, half as castor pomace and half as nitrate†..	2035	"
H	210 " " all in form of castor pomace	2005	"

* See page 7.

† See page 6.

The colors of the pole-cured leaves are described as "very dark" from plot I; as "dark" from plots Q, T, and U; as "medium dark," J; and as "a little dark," S. The color of H is not reported.

On the average the castor pomace plots produced a very little more than the corresponding cotton seed meal plots, 1866 pounds against 1771 pounds, the average difference amounting to 95 pounds per acre. The difference in yield of wrappers was, however, only 17 pounds per acre in favor of the castor pomace. The difference in color was slight, that raised on cotton seed meal inclined to be lighter than that from pomace. The lightest colors of all were in tobacco from the plots fertilized with cotton hull ash and either cotton seed meal or castor pomace. The single exception is plot P, raised on nitrate of potash and Cooper's bone, which was the lightest in the experiment; but the yield from this plot was very small and the burn was poor.

With the same quantities of nitrogen and phosphoric acid a like quantity of potash in form of double sulphate of potash and magnesia, gave a larger total crop and a larger weight of wrappers than either cotton hull ashes, high grade sulphate of potash or carbonate of potash (compare plots K and L with A, M, N and O). There was no very great difference in the color of the crops raised on these different forms of potash. That on A is dark, but on B, C and D, which also received the same quantities of cotton hull ashes with larger quantities of nitrogen, the color of the tobacco was light.

Plot P received only nitrate of potash and bone, the latter containing very little nitrogen. The tobacco on this plot appeared abnormal during all the season and was late in ripening. The total crop was only at the rate of 1250 pounds to the acre and of this only 455 pounds were wrappers.

PER CENT. OF WRAPPERS IN CROP.

It appears that a large yield is generally accompanied with a large percentage of wrappers. Of the ten crops which had more than 70 per cent. of wrappers in them six produced more than 2000 pounds to the acre and all of them over 1800 pounds.

NUMBER OF LEAVES TO THE POUND OF WRAPPERS.

This point, together with the burning quality of the leaf and the color, most largely determine the value of wrapper tobacco

for manufacture. Our Connecticut leaf tends all the time to grow too large; so large that it cuts to great waste in the cigar manufacture. This can be certainly remedied by special attention to the growing of seed. It is an extremely important matter which may well receive the attention of growers.

The determinations of the weight of leaves in these crops was made with thirty leaves of the long wrappers and fifty leaves of the short wrappers on a balance sensitive to the one-thirtieth of an ounce.

From the table it appears that the lightest wrapper leaves (in weight, not color), were in the crops from R, Bowker's; L, double sulphate of potash and magnesia with lime; V, Mapes'; A, B and D, cotton seed meal and cotton hull ash; H, F and G, castor pomace and cotton hull ash; W, Mapes'; M, cotton seed meal and high grade sulphate; and lightest of all, were those from P. On O also the leaves were very light.

The heaviest leaves in the experiment were from plots S, Bowker; U, Mapes'; X, Sanderson; T, Ellsworth; W, Mapes'; Q, Baker; and J, heavy applications of castor pomace and nitrate of soda.

It must be borne in mind that the relative weight of the leaves may be very greatly changed by the "sweat" and that heavy leaves may lose in the "sweat" relatively more substance than lighter ones.

COMPARATIVE CAPACITY OF HOLDING FIRE.

This is one of the elements which determines the burning quality of a wrapper. It represents the time during which the leaf will continue to glow after it has been kindled.

The determination was made in the following way. Lighters were prepared according to a plan suggested by Dr. Nessler,* of Karlsruhe, as follows: 80 grams of gum arabic are soaked up in 120 c.c. of water and 40 grams of gum tragacanth in 250 c.c. of water. After 48 hours, when both are thoroughly diffused, 10 grams of powdered nitrate of potash are added and enough pulverized charcoal, about 350 grams, to make a thick mass which can be rolled upon a glass plate sprinkled with powdered charcoal, into sticks about 5 or 6 inches long and as large around as a cigar, and dried with a gentle heat. When these sticks are lighted they will slowly burn, without flame, till consumed, giving a live

* Landw. Versuchs-St, xl, 399.

coal like the tip of a cigar, which is just adapted to kindle the glow on a leaf.

The leaf is held horizontally over this lighter and brought down on its point till a circular hole is burned, glowing on the edges. It is quickly removed and the number of seconds which elapse till the last spark of fire goes out from the leaf is noted.

Six tests were made on each leaf, three on each side of the midrib, one near the base, one in the middle and midway between midrib and edge of leaf and the third near the tip. Five leaves from each lot of wrappers were thus tested making in all thirty trials from each lot and the average of the thirty was taken to represent the relative glowing capacity of the lot.

The lot which glowed for the shortest time is represented by 100 in the table.

Inspection of the table shows that the tobacco from the following plots glowed longer than that from any other:

Plot F, castor pomace and cotton hull ash; P, nitrate of potash and bone; C, cotton seed meal and ash; G, castor pomace and ash; J, castor pomace and ash with nitrate; O, cotton seed meal and carbonate of potash; D, cotton seed meal and ash.

The tobacco from the following plots glowed for a shorter time than any other:

Plot W, Mapes'; Q, Baker; X, Sanderson; T, Ellsworth; U, Mapes'; M, cotton seed meal and high grade sulphate; V, Mapes'.

APPEARANCE OF THE ASH WHEN THE LEAF WAS USED AS A WRAPPER.

A single leaf was picked by Mr. DuBon from the long wrappers of each plot during the sorting. He aimed to have it of about average color and from as near the same position on the stalk as could be. From this leaf, wrappers were cut and wound on small cigars (Clark's Little Beauty).

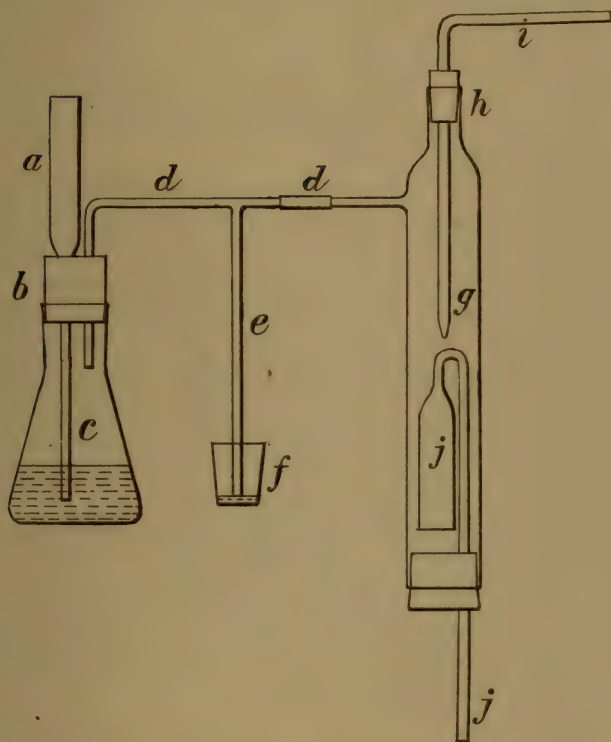
These cigars were then smoked for about one-third of their length in an apparatus specially made for this purpose, which is described and figured below. The cigars, with the ash adhering, were then fastened on pins in vertical position so that the whole series could be examined together and compared.

DESCRIPTION OF THE SMOKING APPARATUS.

If a continuous stream of air is drawn through a cigar it is much more liable to burn unevenly, one side more rapidly, than

if the draught is intermittent, as when it is "smoked." But the smoking of twenty or thirty cigars in succession, wrapped with unfermented leaves, is quite impossible for "the Station representative" or any one but a confirmed smoker with a sound stomach.

To meet these difficulties and to secure a perfectly uniform rate of smoking and a perfect cone of ash, this apparatus was devised by Prof. S. L. Penfield, of the Sheffield Scientific School, at our request. It has proved to be perfectly adapted to our needs.



The lighted cigar is set upright in the glass holder *a*, a tube which passes through a rubber stopper *b*, nearly to the bottom of the flask *c* of about 200 ccm. capacity, which contains water through which the smoke is drawn. The flask *c* is connected with the other parts of the apparatus by the tube *d*, an arm of which *e* dips very slightly below the surface of mercury contained in the beaker *f*. The other arm of the tube *d*, connects

with the glass aspirator *g*. This consists of a cylinder of glass, narrow at the top and closed by a rubber stopper *h*. Through the stopper passes the tube *i* connected with a Mariotte bottle. By means of a stop-cock, water may be made to flow into *g* through *i* at a perfectly uniform rate. The lower stopper of *g* carries the syphon *j*, the short arm of which has a much larger diameter than the long arm. The aspirator *g* is held in vertical position by a clamp and *f* and *c* rest on a block of wood. The operation of the apparatus is as follows: The whole being connected as in the figure, the cigar is lighted and tightly inserted in *a*. To insure a good draught a hole may be made from the butt of the cigar for a third of its length with a knitting needle before lighting. A slow stream of water is then allowed to run in at *i*. While *g* is filling, air is forced out through *e* in *f* and there is no current through the cigar.

As soon as *g* fills to the level of the bend in the syphon *j*, the syphon operates and quickly draws off all the water in *g*, thereby making in the tube *d* strong suction which is transmitted to the cigar; that is, the automatic smoker takes a long drawn "pull" at the cigar. As soon as *g* is emptied, the syphon stops running, the reservoir fills again and then takes another puff at the cigar as before. This is allowed to go on till the cone of ash on the cigar is sufficient for the purpose. Then the cigar is carefully removed and mounted for inspection and a new one substituted.

Nothing need here be added to the notes on the appearance of the wrapper ashes as given on page 14.

The test being made only on a single leaf is not entirely satisfactory, though the leaf was chosen with care.

When the tobacco has been fermented a number of cigars wrapped with the leaves of the several plots will be reserved for this smoking test, which will then conclusively determine their burning quality as wrappers.

THE JUDGMENT OF THE TOBACCO EXPERTS.

It must be distinctly understood that this judgment is given on the appearance of the unfermented leaves, and it is expressly stated by the experts to be in no sense a final judgment on the quality of the crop.

The relative value of the tobacco from the several plots is liable to very great changes during the fermentation which no one can appreciate or estimate from an examination of the tobacco before it has been cased and fermented.

Too great emphasis cannot be laid on this, and it is particularly requested that if the experts' judgment is copied or republished, this preliminary statement may always appear with it.

The crop has been perfectly cared for and is in excellent condition. It would probably sell for thirty cents a pound right through.

All things considered from present appearances (December, 1892), the following are the best crops in the lot, the very best being placed at the head of the list and the others following in order of excellence. There is very little to choose between the last of them.

THE BETTER TOBACCOS.

From Plot	Fertilized with
A	1500 Cotton Seed Meal.
	1500 Cotton Hull Ashes.
I	2640 Castor Pomace.
	1500 Cotton Hull Ashes.
	440 Nitrate of Soda.*
G	3300 Castor Pomace.
	1500 Cotton Hull Ashes.
F	2640 Castor Pomace.
	1500 Cotton Hull Ashes.
N	1500 Cotton Seed Meal.
	620 High Grade Sulphate of Potash.
	360 Cooper's Bone, 300 Lime.
K	1500 Cotton Seed Meal.
	1220 Double Manure Salt.
	360 Cooper's Bone.
O	1500 Cotton Seed Meal.
	580 Carbonate of Potash.
	360 Cooper's Bone.

THE POORER TOBACCOS.

The poorest is placed at the head of the list and the others follow, each being better than those above it in the list.

From Plot	Fertilized with
V	501 Lime.
	501 Mapes' Starter.
	2601 Mapes' Tobacco Fertilizer with Extra Potash.
B	2000 Cotton Seed Meal.
	1500 Cotton Hull Ashes.

* One-half at first cultivation, one-half at second cultivation.

Q	2020 Baker's A. A. Superphosphate.
	3920 Baker's Tobacco Fertilizer.
P	760 Nitrate of Potash.
	500 Cooper's Bone.
T	900 Ellsworth's Starter.
	2700 Ellsworth's Foundation.
R	2000 Bowker's Tobacco Manure.

V has the poorest burn of any. P burns rather black. L has a very little white vein, otherwise K and L are equal in value. There is *very* little if any difference in quality between H and D.

There is not a quarter of a cent a pound difference in the value of the other crops not specially named here and it must be remembered that the last crops named in both lists are not so very far apart in quality.

CHLORINE IN THE TOBACCO FERTILIZER AND IN THE CROP.

Why certain crops or leaves of tobacco burn well and others burn badly is not fully understood. It is likely that fat and proteids as well as the salts of mineral and organic acids have a decided influence on the burning quality.

But it has been demonstrated that tobacco which contains large quantities of chlorides does not burn well, especially when the quantity of potash present is small. Nessler found* from examination of 46 samples of tobacco grown in different parts of Baden on soils of diverse character, that the more potash and the less chlorine a leaf contains, the longer it will continue to glow when lighted. The higher the per cent. of potash the more chlorine may be present without seriously affecting the burn of the leaf. A Sumatra leaf for instance with .64-.78 per cent. of chlorine and 5 per cent. of potash burned very well, while a Baden tobacco with .4 per cent. chlorine and only 3 per cent. of potash burned badly. On the other hand the less chlorine there is in the leaf, the less potash is necessary to secure a good burning quality. He concludes that no tobacco burns well which has less than 2.5 per cent. potash if there is with it more than .4 per cent. chlorine.

It is therefore of interest to determine the quantities of chlorine applied in the formulas given on pages 6 and 7, as well as the quantities of potash and chlorine in the crops.

* Landw. Versuchs-St., xl, 407.

Below are given approximately the quantities of chlorine applied per acre in the formulas. The plots not named received very little if any chlorine.

Plot.	Quantity of Chlorine applied per acre.		Quantity of Chlorine applied per acre.
I	1.3 pounds.	S	73.2 pounds.
J	1.3 "	U	26.0 "
K	22.0 "	V	31.3 "
L	22.0 "	W	21.9 "
Q	90.5 "	X	12.7 "
R	23.0 "		

The percentages of phosphoric acid, potash and chlorine in the pole-cured (unfermented) long wrappers and short wrappers were as follows:

Plot.	Phosphoric acid		Potash		Chlorine	
	Long.	Short.	Long.	Short.	Long.	Short.
A	.65	.41	4.25	4.57	.18	.09
B	.39	.33	4.13	4.43	.08	.05
C	.51	.38	5.20	5.09	.11	.06
D	.57	.42	4.61	4.61	.09	.14
E	.75	.70	3.83	3.84	.21	.11
F	.47	.32	5.13	5.06	.05	.05
G	.58	.43	4.94	4.49	.08	.05
H	.44	.32	5.15	4.69	.08	.05
I	.50	.31	3.53	4.36	.16	.08
J	.47	.28	5.28	4.78	.17	.09
K	.48	.30	4.26	4.20	.36	.21
L	.58	.47	4.95	4.73	.08	.07
M	.67	.64	4.83	4.22	.12	.08
N	.45	.38	5.07	4.61	.21	.10
O	.52	.41	4.64	4.42	.07	.05
P	.63	.59	5.04	5.19	.06	.05
Q	.36	.29	3.25	3.90	.56	.47
R	.65	.49	4.72	4.21	.22	.15
S	.41	.31	4.59	4.64	.91	.54
T	.36	.29	3.77	3.58	.25	.15
U	.38	.30	3.80	3.84	.65	.36
V	.33	.29	4.20	4.77	.54	.26
W	.38	.33	5.06	4.59	.42	.21
X	.36	.28	4.45	4.14	.10	.06

Inspection of these figures with those given on page 14 shows:

1st. That of the tobaccos from the nine plots to which any considerable quantity of chlorine had been applied, viz: K, L, Q, R, S, U, V, W, X, six, viz: S, U, Q, V, W, K, had over a quarter

of a per cent. chlorine in the wrappers and more than any others, and only two out of the nine had the average capacity of holding five, viz: L and R.

2nd. Five lots of tobacco on the other hand, viz: T, M, N, E, A, to which no chloride had been applied and none of which contained over a quarter of a per cent. chlorine, had less than the average capacity for holding fire.

It is not certain that any of these tobaccos have enough chlorine in them to seriously damage their burning quality, and after fermentation has altered the nature of the organic material of the leaf the relative burning quality may be considerably changed.

A certain small quantity of chlorine is absolutely necessary to the normal development of the plant, but growers do well to avoid applying it in other than very small quantities.

FORMULAS FOR TOBACCO.

The investigations made by the Director of this Station in 1872, as chemist of the State Board of Agriculture and those made since then in this Station have shown with sufficient accuracy what ingredients and how much of each are taken from the soil by a crop of wrapper-leaf tobacco as it is grown in this state.

Eight thousand tobacco plants set on an acre of land yield on the average 1875 pounds of pole-cured leaves or 1400 pounds of water-free leaf and 3200 pounds of pole-cured stalks, or about 1300 pounds of water-free stalks.

By this crop there are withdrawn from the soil per acre the following quantities (pounds) of nitrogen and mineral matters:

	In the Leaf.	In the Stalks.	Total.
Nitrogen.....	65	32	97
Phosphoric Acid.....	8	8	16
Potash	89	49	138
Soda	4	3	7
Lime	81	13	94
Magnesia	25	5	30
Sulphuric Acid.....	16	5	31
Chlorine	5	6	11

The crop takes relatively large quantities of nitrogen, (100 pounds), potash, (140 pounds), and lime, (100 pounds), and very little phosphoric acid, (16 pounds).

On pages 6 and 7 are a number of formulas approved by tobacco growers and by manufacturers.

Among these may be placed A, B, C, E, F, G, and those from Q on through the list. Below are given the number of pounds of nitrogen, phosphoric acid and potash removed from an acre by the crop and the maximum and minimum quantities supplied in these various formulas.

	Removed by Crop.	Supplied in the Formulas.
Nitrogen.....	100	99—345
Phosphoric Acid.....	16	150—581
Potash	140	168—643

The minimum quantity of phosphoric acid in any of these formulas is probably much larger than is necessary, the minimum quantities of nitrogen and potash are probably rather too small but the maximum quantities of each ingredient are prodigally wasteful if applied year after year.

Their use the first year might be justified because the land was new and had received no manure in many years, and of course much of the fertilizer applied would not be reached by the roots of the first crop, but would remain as a sort of "working capital" for future crops. Most of the excess of potash and phosphoric acid will be held by the soil till taken up by plants, while the nitrogen is likely to suffer loss by leaching, particularly in very light "tobacco" soils.

But it is certainly irrational to continue the heaviest applications year after year *except for purposes of experiment*.

It is likely also that many growers in their anxiety to secure light color and good burning quality regularly use a good deal more potash and phosphoric acid than is necessary, thus increasing by \$10 to \$20 per acre the cost of raising the crop. To illustrate:

A favorite formula in the Connecticut River valley, which has given very satisfactory results for the last six years, both as regards total yield, and also color and burning quality of wrappers is 2,000 pounds of cotton seed meal and 1,500 pounds of cotton hull ashes per acre. 2,600 pounds of castor pomace are preferred by some to the cotton seed meal.

As is seen on page 6, opposite plot B, this formula provided 140 pounds of nitrogen, 165 of phosphoric acid and 350 of potash. It contains in round numbers 40 pounds of nitrogen, 145 pounds of phosphoric acid and 210 pounds of potash *in excess* of the

quantity actually removed by the crop. Considering that all the fertilizer which is applied cannot come within reach of the plant roots in the same season, that a certain excess in the soil is probably favorable to a rapid absorption by the roots of plants, and that nitrogen is specially liable to loss by leaching on the very light soils which are chiefly used for tobacco, the excess of nitrogen in the formula is surely not wasteful. But unless excessive applications of phosphoric acid and potash have some beneficial action on color, burning quality or ripening of the leaf, it must be irrational to apply year after year ten times as much phosphoric acid and two and a half times as much potash as the crop requires.

Whether an excess of phosphoric acid in the soil hastens the ripening of tobacco as it does of some other crops, sugar beets for instance, is not known. Nessler's observations go to show that the more phosphoric acid there is in the soil, the more is taken up by the tobacco plant and that a high percentage of phosphoric acid in the plant is likely to prevent the wrapper from giving a white ash.

Whether any unfavorable action is to be anticipated from excess of potash in the soil is not known and perhaps is not likely. The more potash there is in the tobacco the larger the quantity of chlorine which may be in it without injury to burning quality, and possibly an excess of potash may prevent injury that would otherwise be done by a great excess of phosphoric acid.

It would be desirable in any case to try lessening the expense of growing the crop by diminishing the quantity of cotton hull ashes used and noting whether there was any deterioration in quality. For the formula above given might be substituted for instance 2,000 pounds cotton seed meal and 800 pounds of cotton hull ashes which would supply about 136 pounds nitrogen, 119 of phosphoric acid and 201 of potash.

If 2,640 pounds of castor pomace were used instead of the cotton seed meal, it would supply with the ashes, 17 pounds less phosphoric acid and 7 pounds less potash than the above formula.

But it is likely that the supply of cotton hull ashes will be insufficient this year to meet the demands of the growers. If so, economy in the use of potash and phosphates will be more than ever desirable.

Three hundred and fifty pounds of high grade sulphate of potash, or 650 pounds of double sulphate of potash and magnesia, mixed with 2,000 pounds of cotton seed meal, or 2,550 pounds of

castor pomace, or 2,600 pounds of linseed meal, old process—which we are informed is to be introduced as a tobacco fertilizer the coming season,—will supply about 140 pounds of nitrogen, 48 to 56 pounds of phosphoric acid and 200 pounds of potash at a cost of from \$36 to \$43 per acre. Many growers in the Connecticut Valley would prefer to add to this, 200 to 300 pounds of lime to the acre, both to supply lime to the crop and also to maintain a mild alkaline reaction in the soil favorable to the decay and oxidation of nitrogenous organic matters. In the limestone soils of the Housatonic Valley this would probably be of no advantage.

The Connecticut Tobacco Experiment Co., plans to try several of these formulas this season, but it is of great importance that the experiments made in Poquonock should be repeated on soils of different character, the “meadow land” of that vicinity for instance, the different soils of the east bank of the Connecticut River and also in the Housatonic Valley. It is very well known that a system of fertilizing or manuring tobacco very suitable for one soil is much less suited to many other soils.

In the following table are given the average quantities of nitrogen, phosphoric acid, potash and chlorine contained in one hundred pounds of the materials most used in tobacco fertilizers in this State as determined by analyses made at this Station during the last six years:

AVERAGE COMPOSITION OF FERTILIZERS USED ON TOBACCO.

	No. of Analyses.	Pounds per 100.			
		Nitrogen.	Phosphoric Acid.	Potash.	Chlorine.
Nitrate of Soda.....	13	16.02	----	----	.37
Sulphate of Ammonia.....	14	20.41	----	----	--
Cotton Seed Meal.....	35	6.80	2.60	1.70	--
Castor Pomace.....	23	5.40	1.90	1.10	--
New Process Linseed Meal.....	--	5.31	2.17	1.54	--
Dissolved Bone Black.....	19	----	17.05	----	--
Ground Bone.....	--	4.00	22.00	----	--
Double Sulphate of Potash and Magnesia.....	15	----	----	26.1	1.8
High Grade Sulphate of Potash.....	3	----	----	51.4	--
Double Carbonate of Potash and Magnesia†.....	1	----	----	18.1	.15
Wood Ashes, unleached.....	35	5.31	1.46	----	--
Cotton Hull Ashes.....	106	----	9.60	23.90	--
Tobacco Stems.....	4	1.91	.69	7.70	*
Tobacco Stalks.....	--	.87	.24	1.66	.20
Horse Manure (with litter).....	3	.55	.43	.58	.07
Cow Manure.....	3	.54	.30	.43	.08

* Not determined.

† See page 34.

See also analyses of the brands of manufactured Tobacco Manures given on pages 98 to 100 of this Report.

By multiplying the number of *hundred* pounds of fertilizer used per acre by the figures above given, may be approximately calculated how much of the three elements of plant food is applied. Thus if 300 pounds of nitrate of soda is used per acre, the quantity of nitrogen applied is (3×16.02), 48.06 pounds.

CHEMICAL CHANGES IN TOBACCO DURING FERMENTATION.

In December, 1891, three lots of tobacco were selected at the warehouse of Mr. A. C. Sternberg of Hartford, as follows: The lots were taken from a pole-cured crop raised with cotton seed meal and cotton hull ashes as a fertilizer.

Lot A was of upper leaves, cut of course when not fully ripe. From a pile ready for casing, two leaves were selected at a time, as nearly alike in color, size and texture as possible and put in two separate piles. Each pile contained 75 leaves which were tied in five "hands." The weight of the two piles was precisely alike, 1 pound $1\frac{1}{2}$ ounces each. The hands from one pile were securely wrapped in oiled paper and brought to the laboratory where they were immediately analyzed, the others suitably labeled, were given to Mr. Sternberg who cased them down with other tobacco to be fermented. Lot B was selected in the way just described, from the "short seconds," the lower leaves on the stalks and therefore a little over-ripe when harvested. Each pile, precisely alike in weight, 1 pound, 9 ounces, contained 175 leaves, and was tied in seven hands. The hands from one were immediately analyzed, those from the other were cased down. Lot C was of "First Wrappers," the best leaves on the stalk, cut at the proper time. Each pile contained 140 leaves, weighed 2 pounds, $1\frac{1}{2}$ ounces, and was tied in seven hands. The one sample was immediately analyzed, the other was cased down. Of this sample only a portion was taken for drying and analysis.

In the latter part of August, 1892, Mr. Sternberg opened the fermented, "sweated," tobacco and immediately sent to the Station the three samples, very carefully packed, to avoid any loss of moisture. The samples were at once dried and analyzed.

The condition of the tobacco when analyzed is shown in the following table:

	A Upper Leaves.		B Short Seconds.		C First Wrappers.	
	Unfermented.	Fermented.	Unfermented.	Fermented.	Unfermented.	Fermented.
Number of leaves in sample.....	75	75	175	175	60	60
Weight of the leaves, (grams).....	505	456	713	625	401	365
Number of leaves in one pound....	67	74	111	127	68	74
Per cent. of water in the leaves....	23.5	23.4	27.4	21.1	27.5	24.9

The chemical analyses of the leaves are given in detail below :

ANALYSES OF FERMENTED AND UNFERMENTED LEAVES.

	A Upper Leaves.		B Short Seconds.		C First Wrappers.	
	Unfermented.	Fermented.	Unfermented.	Fermented.	Unfermented.	Fermented.
Water.....	23.50	23.40	27.40	21.10	27.50	24.90
Ash*.....	14.89	15.27	22.85	25.25	15.84	16.22
Nicotine.....	2.50	1.79	.77	.50	1.26	1.14
Nitric Acid (N_2O_5).....	1.89	1.97	2.39	2.82	2.59	2.35
Ammonia (NH_3).....	.67	.71	.16	.16	.33	.47
Other Nitrogenous matters†.....	12.19	13.31	6.69	6.81	11.31	11.62
Fiber.....	7.90	8.78	7.89	8.95	9.92	10.42
Starch.....	3.20	3.36	2.62	3.01	2.89	3.08
Other Nitrogen-free Extract.....	29.39	27.99	26.28	28.36	25.52	26.88
Ether Extract.....	3.87	3.42	2.95	3.04	2.84	2.92
	100.00	100.00	100.00	100.00	100.00	100.00

From the data obtained has been calculated the number of pounds of each ingredient of the leaves in one thousand pounds of the unsweated tobacco, and also how many pounds of each ingredient were left after fermentation. The differences should represent the losses incurred during the process.

* Free from carbonic acid and carbon.

† Nitrogen other than that of nicotine, nitric acid and ammonia, multiplied by 6½.

COMPOSITION OF 1000 POUNDS OF UNFERMENTED LEAVES AND THE LOSS OF EACH INGREDIENT DURING FERMENTATION.

	A Upper Leaves.			B Short Seconds.			C First Wrappers.		
	In 1000 Pounds Unfermented.	Left after Fer- mentation.	Lost in Fermen- tation.	In 1000 Pounds Unfermented.	Left after Fer- mentation.	Lost in Fer- mentation.	In 1000 Pounds Unfermented.	Left after Fer- mentation.	Lost in Fermen- tation.
Water.....	235.9	211.5	23.4	274.0	184.6	89.4	275.0	226.2	48.8
Dry Matter.....	765.0	691.3	73.8	726.0	692.0	34.0	725.0	683.1	41.9
Ash.....	148.9	138.1	10.8	228.6	221.5	7.1	158.3	147.5	10.8
Nicotine.....	25.0	16.2	8.8	7.7	4.4	3.3	12.5	10.5	2.0
Nitric Acid (N_2O_5).....	18.6	17.7	.9	23.7	24.8	†1.1	25.9	21.3	4.6
Ammonia (NH_3).....	6.7	6.5	.2	1.6	1.4	.2	3.3	4.3	†1.0
Other Nitrogenous matters*.....	121.0	120.1	.9	67.6	59.7	7.9	113.1	105.6	7.5
Fiber.....	79.1	79.5	-----	78.9	78.6	.3	99.0	94.8	4.2
Starch.....	31.9	30.3	1.6	27.6	26.3	1.3	28.9	28.0	.9
Other Nitrogen-free Extract.....	29.52	252.0	43.2	260.6	248.6	12.0	255.6	244.5	11.1
Ether Extract.....	38.7	30.9	7.8	29.7	26.7	3.0	28.4	26.6	1.8

Total loss by Fermentation.—The Upper Leaves, Short Seconds and First Wrappers lost respectively, by fermentation, 9.7, 12.3 and 9.1 per cent. of their total weight.

But while three-fourths of the loss in the case of the Short Seconds consisted of water, in the case of the Upper Leaves almost three-fourths of the loss was of dry matter. The First Wrappers lost a little less dry matter than water.

Ingredients of the Leaf affected by Fermentation.—The quantities of nitric acid, ammonia, fiber and starch contained in the leaves are about the same after fermentation as before.

It will be noticed that there is an apparent loss of ash or mineral matter in each case. This cannot possibly be due to changes induced by fermentation but can only be explained by errors in weighing or analysis against which every precaution was exercised, or by the handling of the leaves by the persons who cased it down. Tobacco is usually shaken out very vigorously as it is cased to make the leaves smooth, and in this way adhering sand may be easily shaken out. This latter explanation is the most probable.

Aside from this, the chief loss of dry matter has been in nicotine, albuminoids and amide bodies, nitrogen-free extract and to a much less extent, ether extract.

* Nitrogen other than that of nicotine, nitric acid and ammonia, multiplied by 6½.

† Apparent gain!

Thus the Upper Leaves lost more than a third of their nicotine, the Short Seconds somewhat less than half and the First Wrappers less than one-sixth of it.

The Upper Leaves in which fermentation was evidently the most active lost more than one-seventh of their nitrogen-free extract and one-fifth of their ether extract.

The First Wrappers claim special notice as they make up a large part and the most valuable part of any good crop.

The fermentation *in this case* destroyed only 5.8 per cent. of their dry matter. They lost but a little nicotine, and aside from the ash the chief losses were of nitrogenous matters other than nicotine and of nitrogen-free extract which includes the "gum" of tobacco.

Further experiments made on a much larger scale are desirable to accurately ascertain the nature of the fermentation and the possibility of regulating it to suit the special requirements of the leaf.

ANALYSES OF TOBACCO STALKS WHEN CUT AND AFTER CURING.

In the summer of 1891, three samples of stalks were taken by Mr. Winton from the standing crop of Mr. H. H. Austin of Suffolk.

On August 22, three lots of four plants each were selected with care to secure those that were uniform in size and leaf development.

The plants of one lot, A, were cut at that time, the leaves were at once stripped off and the stalks after weighing were dried at 50° C. for analysis. At this time the lower leaves were ripe, but the whole plant was unripe and not ready to cut for curing on the stalks.

On September 7, a second lot, D, was cut, stripped, weighed and further treated like A. The plants were fully ripe and ready to harvest.

On the same date a third lot, C, was cut, labeled and hung in Mr. Austin's curing barn with the leaves still on it to cure with the rest of the crop. On October 16, the leaves were stripped off and the cured stalks were weighed, dried and analyzed like the others.

Following are the analytical data which are discussed further on :

ANALYSES OF TOBACCO STALKS.

Sample marked, Date of cutting, Weight when stripped,	A Aug. 22. 4 lbs. 11½ oz.		D Sept. 7. 4 lbs. 14 oz.		C Sept. 7. 1 lb. 11½ oz.*	
	Fresh.	Water-Free.	Fresh.	Water-Free.	Fresh.	Water-Free.
Water.....	86.46	-----	86.38	-----	61.52	-----
Pure Ash.....	.90	6.64	.95	7.00	2.87	7.46
Sand and Soil.....	.19	1.44	.08	.56	.14	.36
Nicotine.....	.07	.52	.09	.69	-----	-----
Nitric Acid (N ₂ O ₅).....	.19	1.40	.23	1.72	.73	1.92
Other Nitrogenous matters†.....	1.31	10.13	1.56	11.69	6.37	16.69
Fiber.....	4.76	35.12	4.74	34.79	14.23	36.98
Starch.....	1.56	11.55	1.94	14.21	4.96	12.91
Dextrose or copper-reducing bodies.....	.39	2.87	.37	2.71	.25	.66
Other Nitrogen-free Extract.....	4.05	29.45	3.53	25.67	8.60	22.15
Ether Extract.....	.12	.88	.13	.96	.33	.87
	100.00	100.00	100.00	100.00	100.00	100.00

The complete analyses of the pure ash are as follows :

ANALYSES OF THE PURE ASH OF TOBACCO STALKS.

	Cut Aug. 22.	Cut Sept. 7.	Cut Sept. 7. and Cured.
Silica.....	.82	.57	.55
Oxide of Iron and Alumina.....	1.38	1.38	.72
Lime.....	14.01	16.58	14.85
Magnesia.....	6.64	7.36	6.91
Potash.....	56.34	54.46	55.43
Soda.....	1.28	1.16	.89
Sulphuric Acid.....	8.06	6.75	7.38
Phosphoric Acid.....	6.37	6.27	7.96
Chlorine.....	6.55	7.05	6.82
	101.45	101.58	101.51
Oxygen equivalent to chlorine...	1.45	1.58	1.51
	100.00	100.00	100.00
Per cent. of pure ash in water-free Substance.....	6.64	7.00	7.46

From these data have been calculated how many pounds of the several ingredients were contained in the stalks from an acre of tobacco or 8000 plants and the results are here given :

* Pole-cured.

† Nitrogen (other than that of nicotine and nitric acid) multiplied by 6.25.

	A Cut Aug. 22. Unripe.	D Cut Sept. 7, Ripe.	C Cut Sept. 7 and Cured till Oct. 16.
Total weight per acre.....	9437	9750	3438
Water	8159.0	8422.0	2115.0
Dry matter.....	1279.0	1328.0	1323.0
Starch	147.0	189.0	171.0
Dextrose	38.0	36.0	8.7
Nicotine.....	6.6	8.8	?
Total Nitrogen	25.5	32.2	41.8
Phosphoric Acid.....	5.5	5.8	7.9
Potash.....	47.8	50.6	54.7
Soda.....	1.1	1.1	.9
Lime.....	11.9	15.4	14.7
Magnesia.....	5.6	6.8	6.9
Oxide of Iron and Alumina..	1.2	1.3	.7
Sulphuric Acid.....	6.8	6.3	7.4
Chlorine.....	5.6	6.5	6.8

These figures show a slight gain by the stalk in almost every ingredient in the period of growth between August 22 and September 7.

If the different samples were exactly alike when cut there would be the same quantity of ash ingredients in the stalks after curing as there was before, for none of them are volatile or could be dissipated by fermentation. We find that they are practically alike except in the case of phosphoric acid and potash which are present in somewhat larger quantity in the cured than in the uncured stalks.

It is quite possible that nitrogen might be lost in the pole curing, but that the plants should acquire nitrogen is not conceivable; yet the cured stalks show 10 pounds more, per acre, than the uncured. This is to be explained by inequality in the samples which were drawn, unless indeed there has been, as some claim is possible, a transference of nitrogen (and to a less extent of phosphoric acid and potash) from the leaves to the stalk, during the curing process.

In curing, the stalks seem to have lost some starch by fermentation and the larger part of the sugar which they originally contained.

The analyses are principally interesting as showing the weight of the stalks and also the plant food which they take from the land while growing and return to it when plowed in.

The stalks on an acre of tobacco containing 8,000 plants weigh at the time of cutting about 9,500 pounds. Of this about 8,300 pounds or 4 1-7 tons is water, which has to be handled and hauled to the barns and hung on the poles. About 6,200 pounds, 3 1-10 tons, of water is evaporated

in curing and the rest, a little over a ton of water, is taken down and carried back to the field in the cured stalks.

Averaging the data here given with other data collected by this Station in past years, the valuable fertilizing ingredients in the stalks from an acre, of 8,000 plants, of tobacco is as follows :

FERTILIZING INGREDIENTS IN STALKS [8,000] FROM AN ACRE OF TOBACCO.

	Average pounds.	Maximum pounds.	Minimum pounds.
Nitrogen.....	32	42	22
Phosphoric Acid.....	8	15	6
Potash.....	49	55	51
Soda.....	3	10	0.5
Lime.....	13	15	8
Magnesia.....	5	7	2
Sulphuric Acid.....	5	7	3
Chlorine.....	6	11	trace

A NEW POTASH SALT FOR TOBACCO.

The Station has received from the Stassfurt Syndicat, for use in the experiments on growing tobacco, one ton of their double carbonate of potash and magnesia. This salt has lately been put on the German market and is being tested by the tobacco growers of Baden and Elsass.

It is a very fine powder, dry to the touch, and a sample drawn by the Station agent from the ton lot has the following composition :

Potash	18.10
Soda	1.49
Lime	1.20
Magnesia	19.27
Oxide of iron and alumina	2.34
Chlorine .....	.15
Carbonic acid	32.55
Water, mostly combined	25.12
	<hr/> 100.22

The composition of this article may also be represented as follows :

Hydrous Carbonate of Potash.....	31.74
Hydrous Carbonate of Magnesia.....	60.21
Carbonate of Soda.....	2.32
Carbonate of Lime.....	2.14
Chloride of Sodium.....	.24
Oxides and carbonates of iron.....	3.35
	<hr/> 100.00

The quantity of chlorine present is too small to be of any significance for tobacco.

This material contains five or six per cent. less of actual potash than cotton hull ashes contain on the average, but seems to be well adapted for use on tobacco in place as either cotton hull or wood ashes.

REPORT OF THE MYCOLOGIST.

WM. C. STURGIS.

The past season has been an exceptionally favorable one for the farmer and fruit-grower so far as the prevalence of fungous diseases is concerned. The prolonged dry weather which marked the middle of June, the latter part of July and of August, and the first half of September, was most unfavorable to the development of parasitic fungi, fruit and garden crops suffered little if at all, hence the work of the mycological department was largely confined to a continuation of the experiments begun the previous year.

TOBACCO.

The work of this department upon tobacco this year was entirely of a preparatory nature.

As outlined in the Station Report for 1891, it was intended to try the value of artificial heat in counteracting unfavorable atmospheric conditions during the process of curing, resulting in the decay known as "pole-sweat." With this and similar ends in view, and in connection with the newly organized Connecticut Tobacco Experiment Co., a plot of land was secured for a term of years at Poquonock, and steps taken for an extensive series of experiments upon the fertilizing of tobacco and the quality of the product under various conditions of fertilization. The results of these experiments have already been published by the Station. Meanwhile a curing-barn built upon the principles of ventilation suggested in the Station Report for 1891, was erected upon the Company's land. The amount of tobacco planted for experimental purposes exceeded that originally proposed, so that it became necessary to alter the plans first made and make the barn considerably larger. The present structure is 60 ft. long by 31 ft. wide, and measures 16 ft. 8 in. from sill to eaves. The land upon which the barn is built slopes slightly, necessitating brick foundation piers to bring the sills level. The studs erected on the sills are 15 ft. apart, thus providing for the use of the usual fifteen-foot poles running the length of the barn, the ends of each pole resting upon

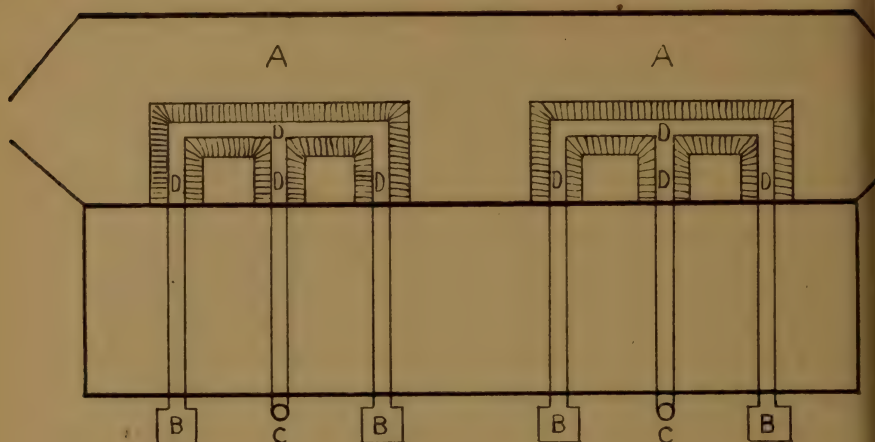
the heavy girders which connect the studs on the opposite sides of the barn.

The lower tier of poles rests on girders at a height of 6 ft. above the floor, the two upper tier spaces are each 5 ft. 4 in. high. This permits of one tier space 5 ft. high in the roof. The doors occupy one half of each end of the barn, thus allowing for a driveway 15 ft. 6 in. wide running the full length of the barn.

The building is so constructed as to be weather-proof in case of need, while free circulation of air is secured by horizontal rows of ventilators opening just above the sills and opposite each tier of poles. These ventilators are 7 ft. 6 in. long by 1 ft. wide and occupy all four sides of the barn except where replaced by the doors; they are hinged along the upper edge so as to be opened or closed at will. This system of ventilation permits of a free access of air just below the tips of each tier of plants as they hang in the barn, and precludes all possibility of damage from the air striking the plants directly as is the case where vertical ventilators are used. To assist further the circulation of air, especially when artificial heat is used in the barn, the gables are each provided with a large swinging ventilator which can be closed when necessary.

The total cost of this barn, not including the heating apparatus, was \$657.56.

To find some system of heating the barn which should be both cheap and easily applicable to the style of barn at present in use, was a matter requiring some thought. It was finally decided to use seven and eight inch galvanized iron stove-piping for the flues, and for furnaces very simple stoves of sheet-iron. In laying the flues advantage was taken of the slope of the land. The furnaces, four in number, were placed along the lower side of the barn on the outside, and sunk so that the smoke-flue came within a foot of the surface of the ground. The flue was then continued within the barn until it reached the drive-way where it was sunk a few inches below the surface to allow of planks being placed over it so that the drive-way could be used when the flues were in position. The accompanying diagram illustrates the ground-plan of the flue-systems.



A, A, represent the driveway; B, B, B, B, the furnaces; the portion of the flues marked D is sunk below the level of the floor in trenches with sloping sides, indicated by the shaded portion. The whole drive-way can be covered with planks which are easily removed whenever the heat from the flues is required. The central flues of each system issue from the barn at C, C and connect with tile chimneys resting upon suitable brick foundations.

It will be noticed that this plan differs from that previously suggested, in that here the flues run across the barn instead of lengthwise, this change being necessitated by the greater length of the barn. Had the ground been level, of course the furnaces would have been sunk deeper so as to allow of the flue being laid on a slight incline sufficient to establish a draught, and yet be below the surface at the drive-way; but as the ground itself sloped considerably the flues could be a foot above the surface at B, rise gradually six inches in twenty feet, and yet be below the surface at D.

The total cost of the furnaces, flues, and chimneys amounted to \$84.37 including labor; and with proper care, especially if the flues and furnaces are painted, the whole apparatus would last some years.

The flues were tested, and were found to be amply sufficient to raise the temperature of the air in the barn to any required degree, and to establish a current of warm air passing off through the ventilators in the eaves. Whether the latter will be sufficient to prevent an accumulation of hot air in the upper part of the barn,

remains to be seen.* It may still be necessary to provide additional ventilation in the roof.

The barn was completed and the flues adjusted August 26th. The tobacco was cut and hung August 29th and 30th. On September 6th, 13th and 14th, there were heavy showers, but with these exceptions, until the first of November the weather was clear and cool with light northwesterly winds. No "pole-sweat" was to be found, and it was therefore impossible to continue the study of the organism producing the decay. It is possible that another season will present an opportunity for further investigation, and for experiments in preventing "pole-sweat" by the judicious use of artificial heat at critical periods of the curing process. We have at least devised a cheap and ready method of applying heat, and one easily applicable to any curing barn.

POTATOES.

Through the kindness of Mr. H. M. Yerrington of Norwich, four acres of potatoes on his farm were secured by the Station for the purpose of experimenting on a large scale with various fungicides in preventing potato blight and rot. Potatoes grown on this land had in previous years suffered considerably from the disease, and it was reasonable to presume that the conditions for an instructive experiment would again prevail. The potatoes were grown in two fields, the one containing two acres and a half, situated on dry upland; the other, distant about a quarter of a mile, situated on sloping ground protected by woods from excessive dryness, and containing an acre and a half. The upper field was reserved for experiments with Bordeaux mixture of two different degrees of strength, the lower for testing the comparative efficacy of acetate of copper in suspension, and an ammoniacal solution of sulphate of copper, using carbonate of ammonia as a solvent according to Johnson's formula.

The "seed" used in both fields was the same, consisting of three varieties: Polaris, Summit, and New Queen. Part of the "seed" was northern, and part native. It may be incidentally mentioned here that the northern "seed" proved by far the best, producing nearly double the yield of the native "seed."

The conditions of growth were further equalized by the use of the same fertilizers on the two fields; Williams & Clark's, Chittenden's, and Coe's, 500 lbs. to the acre broadcast, and 1,500 lbs. in the drills. On June 15th, both fields were staked off, the

upper into three plots covering respectively one acre, one acre, and one-half acre; the lower into two plots, one covering an acre, the other half an acre. The first application of the fungicides was made the same day. A cask containing 50 gallons was mounted on a farm wagon, and fitted with a Gould double-acting force-pump provided with two discharge tubes each fifteen feet in length, and Vermorel nozzles. One man was required to drive, one to pump, and one to direct each spray. A little experience showed that the most expeditious method of using a rough contrivance of this nature was to drive the cart so that two rows came between the wheels; by stopping for a few seconds every twenty or thirty feet the man directing each spray could spray one row beneath the wagon and three on the side, making eight rows treated simultaneously. By attaching each nozzle and tube to a light stick four feet long, the labor of applying the spray was much decreased. There is no doubt that a great deal of time and energy was unnecessarily consumed by this inadequate method of applying the fungicide, and we hope before another season to perfect a cheap and simple device for spraying potatoes, by which one or at most two men will be enabled to spray three or four rows simultaneously as fast as a horse can walk. Even by the method described above, four men could spray an acre and a half in two hours although much time was lost in the frequent turns necessitated by the narrowness of the field. It was feared that much damage would be caused by running over the vines at each turning, but it proved much less than was expected, the vines being only slightly crushed even when almost full-grown, and recovering very quickly.

On the three plots comprising the upper field, which we will call A, B, and C, (C being the half acre) the fungicide used was sulphate of copper. Plot A received Bordeaux mixture in the proportion of 6 lbs. sulphate of copper and 5 lbs. lime to 50 galls. of water, this being about half the strength usually recommended. Plot B received the same diluted with twice the amount of water, viz: 6 lbs. sulphate, and 5 lbs. lime to 100 galls. of water. Plot C was sprayed with sulphate of copper alone in the proportion of $\frac{1}{2}$ lb. to 40 galls. of water. With the fungicide applied to plots A and C Paris green was mixed, in the proportion of $\frac{1}{2}$ lb. to 50 galls.; and plot B received $\frac{1}{4}$ lb. of Paris green to 50 galls. In the centre of the field three rows were left as checks. These received only Paris green.

The two plots comprising the lower field we will call D, and E, the latter being the larger. Plot D was sprayed with acetate of copper 10 oz., Paris green $\frac{1}{4}$ lb., water 40 galls. Plot E received the ammoniacal solution of sulphate of copper in the proportion of 1 lb. carbonate of ammonia, $\frac{1}{2}$ lb. sulphate of copper, dissolved separately, and diluted with water to 62 galls. One corner of this field comprising about one-tenth of an acre was left untreated as a check.

The first spraying on all the plots was begun on June 15th and finished the following day. The vines made a very strong growth during the next three weeks and as there was no appearance of the rot, and the weather was comparatively dry, the second spraying was deferred until July 6th. On this date the vines were in full bloom and so high that it was evident that a third spraying would be impracticable. On July 16th the vines on the lower field began to blight, though no *Phytophthora* was to be found; the cause of the blight was not determined, inasmuch as the vines had dried and were completely dead before they could be submitted to sufficient microscopic examination.

The potatoes on the upper field, especially those sprayed with the stronger Bordeaux mixture, made a good growth and remained comparatively green until the latter part of August when digging was begun, and finished September 10th. The plots sprayed with Bordeaux mixture yielded an average of 291 bushels per acre; the plot treated with the ammoniacal solution of copper sulphate, 146 $\frac{1}{2}$ bushels per acre; the plot treated with acetate of copper, 181 bushels per acre; and that treated with the simple solution of sulphate of copper, 272 bushels per acre.

Under date of November 8th, Mr. Yerrington writes with reference to the crop from the upper field where the Bordeaux mixture was used: "The potatoes are considered something wonderful here as the crop generally is a failure."

Although no *Phytophthora* appeared upon sprayed or unsprayed potatoes in this section and the experiment is therefore valueless as far as this disease is concerned, it is nevertheless instructive, and justifies the following conclusions:

1. Bordeaux mixture, even of half the usual strength, viz: copper sulphate 3 lbs., lime 2 lbs., water 22 galls., exercises a marked effect upon potato vines, considerably increasing their vitality and period of growth.

2. In this respect Bordeaux mixture is superior to the ammoniacal solution of copper sulphate, and to copper acetate.

3. The ammoniacal solution of copper sulphate prepared according to Johnson's formula has one serious objection. The carbonate of ammonia is not only difficult to procure in a perfectly fresh condition, but upon exposure to the air loses water and ammonia, becoming in the course of a few days soft and opaque, in which condition considerably more of the salt is required than when fresh, to dissolve the same quantity of copper sulphate. It is possible of course to procure the ammonia salt fresh and make up at once a sufficient quantity of the concentrated solution of copper sulphate to last during the season, but the quantity required for a season's spraying is not often known accurately, and on the whole it would seem more convenient to use liquid ammonia as a solvent for the copper salts.

4. The expenditure of time and labor in the application of Bordeaux mixture to potato vines, even with imperfect apparatus and methods, is much less than would be expected; the labor of three or four men for 1 hr. and 20 mins. being sufficient to apply the mixture thoroughly to an acre of potatoes almost fully grown. If the mixture is prepared in the proportion of copper sulphate 6 lbs., lime 4 lbs., water 50 galls., the cost of chemicals would be about 28 cents per acre for each application, about 63 galls. being required to spray that area.

An experiment similar to the above was conducted by Mr. F. T. Bradley, of Saybrook. Mr. Bradley used the Bordeaux mixture and a knapsack sprayer. Under date of November 16th he reports as follows: "So far as efficacy of the treatment is concerned I can say nothing, for there was no "rot" in this section this year. I can spray from three to four acres a day at a cost of material of from 40 cents to 60 cents per acre each time."

QUINCES.

LEAF-SPOT. ENTOMOSPORIUM MACULATUM, LÉV.

The experiments of former years in the orchard of Mr. Geo. F. Platt at Milford were continued this year with a view of determining the value of certain other fungicides as compared with the Bordeaux mixture hitherto used with marked success.

The fungicides used were the ammoniacal solution of copper sulphate (carbonate of ammonia as the solvent); modified Eau celeste; acetate of copper in suspension; and a mixture of copper sulphate dissolved in water, and powdered steatite, the latter



BLACK-ROT OF QUINCE.
Sphaeropsis Malorum. Peck.

furnished by Messrs. W. S. Powell & Co. of Baltimore. Each of these fungicides was used on two trees, the remainder of the orchard being sprayed as usual with Bordeaux mixture. The fungicides were applied May 24th, June 11th, and July 12th, and at the time of harvesting the crop no marked difference with regard to the prevalence of "leaf-spot," could be observed between these trees and those treated with Bordeaux mixture. At the time of the last spraying a very small amount of "rust" (*Roestilia aurantiaca*, Peck) was to be observed on all the trees in the orchard, attacking a young fruit here and there or a twig. The trees sprayed with the acetate of copper seemed to be more free from rust than any of the others, and this treatment will be continued another year as the acetate is cheap and easily applied.

None of the other fungicides used however, is in any way superior to Bordeaux mixture.

BLACK ROT OF QUINCES.

SPHÆROPSIS MALORUM, PECK.

Late in October the writer received from Mr. N. S. Platt of Cheshire several quinces more or less affected with a disease inducing a rapid decay of the fruit.

It was first noticed in August last, as a small brown stain on the exposed side of the fruit; the discolored area rapidly increased in size, the parts affected became shrunken and often badly cracked, and upon cutting the fruit open the interior was found to be brown and decayed to the core, and this notwithstanding the fact that all the trees had received thorough treatment with Bordeaux mixture before the blossoms had opened, again June 14th, and finally July 29th. The appearance of the diseased fruit is represented in the accompanying plate. Specimens of the fruit on which the disease had just appeared were placed upon a table in the laboratory. In the course of ten days the decay had involved the whole fruit, and at the end of three weeks numerous black pimples began to appear on the discolored surface of the now shrunken and wrinkled fruit. Finally the fruit became completely "mummified" and reduced by drying to a quarter of its original bulk.

Microscopic examination of the diseased fruit showed that the decay was caused by the presence of a fungus (*Sphæroopsis Malorum*, Peck), the black pimples which appeared from three weeks

to a month after the disease became apparent on the quinces, constituting the fruiting stage of the fungus. This disease is not peculiar to quinces, but has long been known on apples,* and has been frequently described. The "apple quince" seems to be more subject to its attacks than the "orange quince."

It would seem an easy matter to suggest remedial measures for this disease. It seldom makes its appearance before August when the fruit is well grown, a fact which would sufficiently account for its appearance on the sprayed trees this year, the last treatment being made July 29th. Two additional treatments with Bordeaux mixture in August, or one in August and one in September, would probably prevent its appearance. It is needless to say that every "mummified" fruit allowed to remain on the trees or on the ground beneath them, becomes a centre of the disease the succeeding year. All such fruit should be collected at the time of harvest, and buried, or better still, burned.

CELERY.

BLIGHT. *CERCOSPORA APII*, FRES.

Early in July a letter was received from Mr. Gaston T. Hubbard of Middletown, requesting information regarding a disease which attacked and destroyed his celery the previous year. The description of the disease was too meagre to allow of any conclusions regarding its cause, but Mr. Hubbard was recommended to await further developments, and if the disease made its appearance, to send specimens to the Station, and to try dusting part of the plants with powdered sulphur, and using upon another portion a spray of sulphide of potassium in the proportion of $\frac{1}{4}$ oz. to 1 gall. of water. The recommendation was a mere hazard, as it seemed improbable that any fungicide would check a disease once started, and yet it was desirable to allow the disease to start in order that its nature might be determined. About Sept. 10th, specimens of diseased leaves were sent to the Station, and upon examination proved to be attacked by the common leaf-blight of celery, *Cercospora Apii*, Fres.†

Meanwhile the treatment recommended had been carried out since Sept. 1st, when the blight first showed itself. The result of the sulphur treatment seemed satisfactory, although owing to the

* F. L. Scribner, Fungus diseases of the Grape and other Plants, p. 81.

† Twelfth Annual Report N. J. Agr. Exp. Station, p. 250, 1891.

pressure of other work, personal supervision of the experiment by the writer was impossible, and none of the plants were left untreated as checks.

Under date of Nov. 5th, Mr. Hubbard reports: "The disease began to show about Sept. 1st, and I at once dusted half my crop with sulphur, spraying the other half with the potassium sulphide solution. I soon saw that the sulphur was proving the more effective, and henceforth used it on the whole crop. I dusted the plants four times, using two pounds each time on 1,200 plants. Last year I lost my whole crop by this disease. This year the disease was checked by the treatment and I have not lost a plant."

In accordance with past experience the sulphur was applied upon a warm day, in full sunlight, the commonly accepted theory being that under such conditions sulphur gives off a gas destructive to vegetable life, and known as sulphurous acid. This theory does not seem to have sufficient foundation in fact, sulphur being stable except at very high temperatures. We can only say with certainty that at moderately high degrees of temperature sulphur does exert a fungicidal action even when not in contact with any part of the fungus, and that consequently this action, whatever be its cause, is more marked in direct sunlight than upon a cool or cloudy day.

ASTERS, &c.

A DISEASE CAUSED BY NEMATODES.

On August 4th, 1892, I received from Prof. Galloway of the United States Department of Agriculture, two packages of diseased Asters which had been sent to the Department from Hartford, Conn.

Further investigation showed that the disease was not local, but wide-spread throughout New England. Nor was it confined to asters; calendulas, marigolds, and zinnias, all showed similar symptoms of disease. As it appears on asters, the disease is first manifested when the plants are about three inches high. The younger portions of the plant begin to put out long, spindly shoots which are provided here and there with dwarfed and misshapen leaves. These shoots present an unhealthy appearance as though grown in the dark; they are of a pale-yellow or whitish color, and eventually produce dwarf flowers which, like the shoots themselves, are bleached or etiolated. From the bleached and spindly appearance of the plants, the diseased condition is known among florists as "white-legs."

One symptom which, as far as I have observed, always accompanies the disease, has been overlooked by those who have examined the diseased plants. At a late stage of the disease the stem of the plant exhibits signs of decay beginning near the ground and gradually spreading upwards until sometimes the whole stem, especially the internal tissue, is involved.

At first sight one would be inclined to accept the usual theory concerning the disease, and conclude that it was due to the parasitic "blue aphid" which is often found in large numbers upon the roots. But certain considerations seem to preclude this view, though doubtless the aphides are in a measure responsible for the diseased appearance of plants whose roots are infested by them. Correspondence with various florists in Hartford and vicinity elicited the information that the usual remedies against the blue aphid seemed to have no effect in lessening the disease under consideration. Granulated tobacco and sulphur applied liberally to the beds and raked in before planting out the asters were quite inefficient, and no better results followed the application of the same substances at a later period about the base of each plant. Water heated to 140° and poured about the plants proved equally unavailing. The fact thus indicated, that the aphid was not the primary cause of the diseased condition of the plants, received further confirmation from a careful examination of the plants. Some of the specimens sent to me exhibited the characteristic symptoms of the disease, and their roots were swarming with the aphid. Others presenting the same symptoms, grown under the same conditions, and sent to me at the same time, showed not a trace of the aphid. One large grower last year had a lot of over 2,000 plants from which he did not get a perfect blossom. Four different persons examined the roots of these plants from time to time and were unable to find any signs of the aphid. There were plants in the neighborhood of these which showed no symptoms of disease and flowered profusely, yet, on examination of the roots, they were found to be covered with the aphid. These facts led me to examine the roots of the diseased plants more carefully, and as a result the presumable cause of the disease was found in the presence upon the roots of countless minute spherical or fusiform white galls caused by the attacks of microscopic "eel-worms" or nematodes. On crushing or cutting open these galls the worms were seen in several stages of development, generally encysted, but often in the egg or larval condition. Examination

of the decaying stems showed that the presence of the nematodes was not confined to the roots. The pith and inner tissues of such stems were found in all stages of decay even when appearing healthy externally, and in all cases the decayed tissues were swarming with adult nematodes of more than one species. The leaves and dwarfed flower-heads were examined with care but these organs were found to be free from the direct attacks of the worms.

Specimens of the diseased plants were sent to Prof. G. F. Atkinson, at that time biologist of the Alabama Experiment Station, and he kindly gave his opinion to the effect that the root-galls were caused by a species of nematode, *Heterodera radicumicola* Müll., very commonly found in the roots of many plants both wild and cultivated. In the decaying Aster stems, two forms of nematodes belonging to different genera were found and determined by Prof. Atkinson. One of these, belonging to the genus *Rhabditis*, "is not," he writes "known to be harmful, feeding only on decaying vegetable matter." The other, a species of the genus *Aphelenchus*, is probably the primary cause of the disease. The various members of this genus are true parasites, feeding upon the tissues of living plants. One of them is known to cause a leaf-disease of Chrysanthemum, Begonia, Pelargonium, Salvia, Zinnia, &c.* Two others have recently been described† from Europe, producing distortions of the flowering axes of the Strawberry.‡ Owing to the lateness of the season it was impossible to continue the study of this subject further, and determine by means of pure cultures and inoculation of healthy plants, whether this nematode were, as it seemed to be, the primary, if not the sole cause of the disease; but enough was seen to warrant some suggestions regarding remedial measures.

All growers agree that asters planted upon new turf ground are exempt from the disease. It is therefore recommended that if it is desired to grow asters consecutively for several seasons in the same bed, six or eight inches of the old soil be removed each year and replaced by decayed and broken turf. If the asters were grown in only small quantities, as good results might be attained by removing the old surface-soil each year, and using in

* B. D. Halsted. Twelfth Annual Report N. J. Agr. Exp. Station, 1891, p. 310.

† Ritzema Bos. Zeitschrift für Pflanzenkrankheiten, Bd. I, Heft 1.

‡ For further information upon the life-history of nematodes the reader is referred to the U. S. Dept. Agric., Div. of Entomology, Bull. 20, and to "Nematode Root-galls," by Prof. Geo. F. Atkinson.

its place soil sterilized by heat. This could easily be done by means of the device commonly used for drying earth for use in the preparation of asphalt pavement. It consists of a piece of sheet iron, six or eight feet square, bent into a flattened semi-circle, the edges resting upon the ground. A fire of wood is built beneath it, a piece of stove-piping at one end which is partially closed, serves to create a draught and carry off the smoke. Fresh soil is placed upon the heated iron surface, removed after being heated for 10 or 15 minutes, and replaced by more fresh soil. In this way a large amount of soil can be thoroughly and quickly sterilized for garden use.

As to fertilizers, common experience is against the use of barn-yard or stable manure. The cause is apparent upon examination of such manure, as it is found to be a most favorable breeding-place for nematodes, the latter often occurring in whitish masses visible to the naked eye. One grower writes: "Last year over 50% of the asters planted upon manured land were rendered worthless by the disease, while those planted upon turf soil were free from disease and the crop of flowers was excellent." The fertilizers which have given most satisfaction when used in connection with plants subject to nematode attacks, have been as a rule, alkaline mixtures containing but little nitrogenous matter. Kainite or muriate of potash have been used with good success, their effect upon the worms being decidedly deleterious, while nitrogen may be supplied by the liberal use of tobacco dust.

Much can probably be done against nematodes by a proper treatment of the soil previous to planting. Experiments have indicated* that they are susceptible to low as well as high degrees of temperature, and would therefore be very largely destroyed by ploughing or deep spading during the Winter.

Their development and spread is also largely arrested by an alkaline condition of the soil due to the presence of an excess of lime in any form, as was shown by the fact that violets affected by a nematode root disease at this Station upon being transplanted for the Summer into a soil containing a considerable quantity of broken mortar, recovered; the root-galls decayed, and in their place a vigorous growth of new, healthy roots, arose. A top-dressing of lime liberally applied to the beds in the late Autumn, followed in early Spring by a similar application well spaded in would doubtless do much to prevent the disease.

* Bull. 43, Cornell Univ. Agric. Exp. Station, p. 156, Sept. 1892.

Again, drought is fatal to nematodes. Thorough drainage of beds in which asters or other plants subject to nematode disease, are planted, is therefore essential to success.

Finally, it is evident that any diseased portion of a plant which is allowed to remain in the ground at a sufficient depth to be safe from hard freezing, harbors the worms, and becomes a source of infection the following season. All diseased plants should therefore be carefully pulled and burned in the Autumn while they still are in a condition to provide nourishment to the worms. It is probable that when a crop is thoroughly infected with nematodes, there are very few remaining in the soil, and if the plants are then pulled and destroyed, the soil will be left comparatively free of the worms. So important is this fact that in many localities abroad, before planting a crop known to be subject to nematode disease, the farmer plants the land with some rapid-growing and comparatively valueless crop attractive to nematodes. In these "catch-plants" as they are called, the worms collect and are destroyed with the plants, leaving a free field for the more valuable crop.

It must be borne in mind that these suggestions are tentative and rest upon few very conclusive experiments, but they serve at least to point out the direction from which we must look for help in combating this serious pest. For many of the above suggestions I am indebted to the practical florists of the State, especially to Messrs. John Gérard of New Britain, and C. H. Pember of Hartford, and to the valuable report of Dr. J. C. Neal to the U. S. Department of Agriculture, already referred to.

THE CONNECTICUT FERTILIZER LAW.

The General Assembly at its session in 1882 passed a Fertilizer Law which went into effect September 1, 1882, and which repealed and took the place of all previous legislation on this subject. The law is still in force without any amendment.

Copies of the law may be had on application to the Station. Attention is specially called to the following requirements.

1. In case of fertilizers that retail at ten dollars or more per ton, the law holds the SELLER responsible for *affixing a correct label or statement* to every package or lot sold or offered, as well as for the *payment of an analysis fee* of ten dollars for each fertilizing ingredient which the fertilizer contains or is claimed to contain, *unless* the MANUFACTURER OR IMPORTER shall have provided labels or statements and shall have paid the fee. Sections 1 and 3.

The Station understands "the fertilizing ingredients" to be those whose determination in an analysis is necessary for a valuation, viz: Nitrogen. Phosphoric acid and Potash. The analysis-fees in case of any fertilizer will therefore be ten, twenty or thirty dollars, according as one, two or three of these ingredients are contained or claimed to exist in the fertilizer.

2. The law also requires, in case of any fertilizer selling at ten dollars or more per ton, that a *sealed sample* shall be deposited with the Director of the Station by the MANUFACTURER OR IMPORTER, and that a *certified statement* of composition, etc., shall be filed with him.

A statement of the per cent. of Nitrogen, Phosphoric acid (P_2O_5) and Potash (K_2O), and of their several states or forms, will suffice in most cases. Other ingredients may be named if desired.

In all cases the per cent. of *nitrogen* must be stated. Ammonia may also be given when actually present in ammonia salts, and "ammonia equivalent to nitrogen" may likewise be stated.

The per cent. of soluble and reverted phosphoric acid may be given separately or together, and the term "available" may be used in addition to, but not instead of, soluble and reverted.

The percentage of insoluble phosphoric acid may be stated or omitted.

In case of Bone, Fish, Tankage, Dried Meat, Dried Blood, etc., the chemical composition may take account of the two ingredients: Nitrogen, Phosphoric Acid.

For Potash Salts give always the per cent. of Potash (potassium oxide); that of Sulphate of Potash or Muriate of Potash may also be stated.

The chemical composition of other fertilizers may be given as found in the Station Reports.

3. It is also provided that EVERY PERSON in the State, who sells *any commercial fertilizer of whatever kind or price*, shall annually report certain facts to the Director of the Experiment Station, and on demand of the latter shall deliver a sample for analysis. Section 4.

4. All "CHEMICALS" that are applied to land, such as: Muriate of Potash, Kainite, Sulphate of Potash and Magnesia, Sulphate of Lime (Gypsum or Land Plaster), Sulphate of Ammonia, Nitrate of Potash, Nitrate of Soda, etc.—are considered to come under the law as "Commercial Fertilizers." Dealers in these chemicals must see that packages are suitably labeled. They must also report them to the Station, and see that the analysis fees are duly paid, in order that the Director may be able to discharge his duty as prescribed in Section 9 of the Act.

It will be noticed that the State exacts no license tax either for making or dealing in fertilizers. For the safety of consumers and the benefit of honest manufacturers and dealers, the State requires that it be known what is offered for sale, and whether fertilizers are what they purport to be. With this object in view the law provides, in Section 9, that all fertilizers be analyzed and it requires the parties making or selling them to pay for these analyses in part: the State itself paying in part by maintaining the Experiment Station.

OBSERVANCE OF THE FERTILIZER LAW.

MANUFACTURERS who have paid the Analysis Fees as required by the Law, and FERTILIZERS for which fees have been thus paid for the year ending May, 1893.

<i>Firm.</i>	<i>Brand of Fertilizer.</i>
Anderson, W. H., Putnam, Conn.	Ground Bone.
Baker, H. J. & Bro., 215 Pearl St., New York City.	Standard UnXLD Fertilizer. A. A. Ammoniated Superphosphate. Special Potato Manure. Special Corn Manure. Special Tobacco Manure. Pure Ground Bone. Castor Pomace.
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	Stockbridge Tobacco Manure. " Grain Manure. " Grass Top Dressing. " Potato and Veg. Manure. " Fruit Manure. " Seeding Down Manure. Bowker's Hill and Drill Phosphate. " Ammoniated Bone Fertilizer. " Sure Crop Bone Phosphate. " Farm and Garden Phosphate " Potato Manure. " Potato Phosphate. " Tobacco Grower. " Fish and Potash. " Dry Ground Fish. " Fresh Ground Bone. Gloucester Fish and Potash. Kainit.
Bradley Fertilizer Co., 92 State St., Boston, Mass.	Bradley's Superphosphate. " Potato Manure. " Complete Manure for Potatoes and Vegetables. " Complete Manure for Top Dressing Grass and Grain. " Complete Manure for Corn and Grain. " Pure Fine Ground Bone. " Circle Brand Ground Bone and Potash. " Fish and Potash, Anchor Brand. " Fish & Potash, Triangle A Brand. " B. D. Sea Fowl Guano. " Original Coe's Superphosphate. Farmers' New Method Fertilizer. High Grade Tobacco Manure.
Buckingham, C., Southport, Conn.	A1 Fertilizer.

*Firm.**Brand of Fertilizer.*

Coe. E. Frank, 16 Burling Slip, New York City.	Gold Brand Excelsior Guano. Potato Fertilizer. High Grade Ammoniated Bone Superphosphate. Alkaline Bone. Ground Bone and Potash.
Clark's Cove Fertilizer Co., Boston, Mass.	Bay State Fertilizer. Bay State Fertilizer G. G. King Philip Guano. Potato and Tobacco Fertilizer.
Cooper's, Peter, Glue Factory, 17 Burling Slip, New York City.	Bone Dust.
Crocker's Fertilizer & Chemical Co., Buffalo, N. Y.	Crocker's Ammoniated Bone Superphosphate. " Potato, Hop and Tobacco Phosphate. " Vegetable Bone Superphosphate. " Special Potato Manure. " Pure Ground Bone. " Wheat and Corn Phosphate. " New Rival Ammoniated Superphosphate. " Ammoniated Practical Superphosphate. " Buffalo Superphosphate, No. 2. " Ground Bone Meal.
Cumberland Bone Phosphate Co., Exchange Place, Boston, Mass.	Cumberland Superphosphate.
Danbury Fertilizer Co., Danbury, Conn.	Potato Manure. XL Fertilizer. Tobacco Manure. Tankage. Ground Bone.
Darling, L. B., Fertilizer Co., Pawtucket, R. I.	Animal Fertilizer. Fine Ground Bone. Extra Bone Phosphate. Potato and Root Crop Manure.
Davidge Fertilizer Co., 121 Front St., New York City.	Special Favorite Fertilizer.
Downes & Griffin, Birmingham, Conn.	Ground Bone.
Ellsworth, F., Hartford, Conn.	Shoemaker's Swift Sure Superphosphate. " " " Bone Meal. Collier Castor Pomace.
Great Eastern Fertilizer Co., Rutland, Vt.	Great Eastern General Fertilizer for Grass and Grain. Great Eastern Vegetable, Vine and Tobacco Fertilizer. Great Eastern General Phosphate for Oats, Buckwheat and Seeding Down.

<i>Firm.</i>	<i>Brand of Fertilizer.</i>
Hull, H. C., Meriden, Conn.	Ground Bone.
Kelsey, E. R., Branford, Conn.	Bone, Fish and Potash.
Lister's Agricultural Chemical Works, Newark, N. J.	Standard Superphosphate. Ammoniated Dissolved Bone. Success Phosphate. Potato Manure No. 1. Celebrated Ground Bone.
Mapes Formula & Peruvian Guano Co., 143 Liberty St., New York City.	Complete Manure for Light Soils. " " " General Use. " " " "A" Brand. Potato Manure. Corn Manure. Tobacco Starter. Fruit and Vine Manure. Peruvian Guano. Fine Dissolved Bone. Tobacco Manure, Wrapper Brand. Seeding Down Manure. Grass and Grain Spring Top Dressing.
Miller, G. W., Middlefield, Conn.	Flour of Bone Phosphate. Pure Ground Bone.
National Fertilizer Co., Bridgeport, Ct.	Chittenden's Complete Fertilizer. " Ammoniated Bone Phosphate. " Fish and Potash. " Ground Bone. Russell Coe's Phosphate.
Nuhn, Frederick, Waterbury, Conn.	Self Recommending Fertilizer.
Olds & Whipple, Hartford, Conn.	Red Seal Castor Pomace.
Pacific Guano Co., Box 1368, Boston, Mass.	Soluble Pacific Guano. Special Potato Manure.
Peck Bros., Northfield, Conn.	Pure Ground Bone.
Plumb & Winton, Bridgeport, Conn.	Bone Fertilizer.
Preston Fertilizer Co., Greenpoint, L. I.	Ammoniated Bone Superphosphate.
Quinnipiac Co., 7 Exchange Place, Bos- ton, Mass.	Quinnipiac Phosphate. " Potato Manure. " Market Garden Manure. " Pure Bone Meal. " Fish and Potash—Crossed Fishes Brand. " Fish & Potash—Plain Brand. " Pine Island Phosphate. " Havana and Seed-Leaf To- bacco Fertilizer. " Dry Ground Fish. Sulphate of Ammonia. Dissolved Bone Black. Sulphate of Potash. Muriate of Potash.

<i>Firm.</i>	<i>Brand of Fertilizer.</i>
Read Fertilizer Co., Box 3121, New York City.	Standard Fertilizer. High Grade Farmers' Friend. Samson Fertilizer. Bone, Fish and Potash.
Reese, J. S. & Co., 10 South St., Baltimore, Md.	New England Favorite Fertilizer. Pilgrim Fertilizer.
Rogers & Hubbard Co., Middletown, Ct.	Pure Raw Knuckle Bone Flour. Strictly Pure Fine Bone. Soluble Potato Manure. Rogers & Hubbard Co.'s Grass and Grain Fertilizer. Fairchild's Corn Formula.
Rogers Mfg. Co., Rockfall, Conn.	Ground Bone.
Sanderson L., 114 Church St., New Haven, Conn.	Old Reliable Superphosphate. Pulverized Bone Meal. Blood, Bone and Meat. Fine Ground Fish. Muriate of Potash. High Grade Sulphate of Potash. Regular Sulphate of Potash. Nitrate of Soda. Sulphate of Ammonia. Dissolved Bone Black.
Wadsworth, D. S., Hartford, Conn.	Tankage.
Wilcox, Leander, Mystic, Conn.	Ammoniated Bone Phosphate. Potato Manure. High Grade Fish and Potash. Dry Ground Fish Guano.
Wilkinson & Co., 51 William St., New York City.	Economical Bone Fertilizer.
Williams & Clark Fertilizer Co., 81 Fulton St., New York City.	Americus Superphosphate. " Potato Phosphate. " High Grade Special. " Bone Meal. " Fine Wrapper Tobacco Brand. Royal Bone Phosphate.

ANALYSES OF FERTILIZERS.

During the year 267 analyses of fertilizers and manurial waste products have been made. A classified list of them is given on page 63.

Of these a small number were made for private parties and for other experiment Stations to compare and test methods of analysis. The others are given in detail on the following pages.

During April, May and June the authorized agents of the Station visited seventy-one towns and villages in Connecticut and carefully drew 475 samples representing 150 distinct brands of commercial fertilizers.

In this way one or more samples were secured of nearly every brand of fertilizer which is offered for sale within the State. When several samples of a single brand were drawn in different parts of the State the analysis was performed, not on any single sample, but on a mixture made of an equal weight of each of the several samples. Thus, it is believed, the average composition of the goods is more fairly represented than by the analysis of any single sample.

The Station agents are instructed in every case to open at least three packages of each brand for sampling, and if the number of packages is large, to take a portion from every tenth one, by means of a sampling tube which withdraws a section or core through the entire length of the bag or barrel.

As a rule, the Station will not analyze samples—

1. From dealer's stock of less than one ton.
2. From stock which has lain over from last season.
3. From stock which evidently is improperly stored, as in bags lying on wet ground or exposed to the weather, etc.

The Station desires the coöperation of farmers, farmers' clubs, and granges in calling attention to new brands of fertilizers, and in securing samples of all goods offered for sale. All samples drawn by other than Station agents *must* be drawn in accordance with the Station's Instructions for sampling, and properly certified, if the Station analysis is desired. A copy of these instructions and blank certificates will be sent on application.

Samples are analyzed as promptly as possible in the order in which they are received. As soon as an analysis is completed a

copy of it is sent to the party who furnished the sample, and also to the manufacturer, in order that there may be opportunity for explanation or protest, if desirable, before the results are published in the Bulletin.

The following "Explanations" are intended to embody the principles and data upon which the valuation of fertilizers is based, a knowledge of which is essential to a correct understanding of the analyses that are given on subsequent pages.

EXPLANATIONS CONCERNING THE ANALYSIS OF FERTILIZERS AND THE VALUATION OF THEIR ACTIVE INGREDIENTS.

REVISED.

NITROGEN is the most rare, and commercially the most valuable fertilizing element.

Free Nitrogen is universally abundant, making up nearly four-fifths of the common air, and appears to be assimilable, with aid of certain bacteria, by leguminous plants (the clovers, alfalfa, peas, beans), and mustard, but cannot nourish cereals or other crops.

Organic Nitrogen is the nitrogen of animal or vegetable matters, which is chemically united to carbon, hydrogen and oxygen. Some forms of organic nitrogen, as those of blood, flesh and seeds, are highly active as fertilizers; others as found in leather and peat, are comparatively slow in their effect on vegetation, unless these matters are chemically disintegrated.

Ammonia (NH_3) and *nitric acid* (N_2O_5) are results of the decay of *organic nitrogen* in the soil and manure heap, and contain Nitrogen in its most active forms. They occur in commerce—the former in sulphate of ammonia, the latter in nitrate of soda. 17 parts of ammonia or 66 parts of pure sulphate of ammonia contain 14 parts of nitrogen. 85 parts of pure nitrate of soda also contain 14 parts of nitrogen.

PHOSPHORUS is, next to nitrogen, the most costly ingredient of Fertilizers, in which it always exists in the form of phosphates, usually those of calcium, iron and aluminum, or in case of some "superphosphates," in the form of free phosphoric acid.

Soluble Phosphoric acid implies phosphoric acid or phosphates that are freely soluble in water. It is the characteristic ingredient of Superphosphates, in which it is produced, by acting on "insoluble" or "reverted" phosphates, with diluted sulphuric acid (oil of vitriol). Once well incorporated with the soil, it gradually becomes reverted phosphoric acid.

Reverted (reduced or precipitated) Phosphoric acid means strictly, phosphoric acid that was once easily soluble in water, but from chemical change has become insoluble in that liquid. In present usage the term signifies the phosphoric acid (of various phosphates) that is freely taken up by a strong solution of ammonium citrate, which is therefore

used in analysis to determine its quantity. "Reverted phosphoric acid" implies phosphates that are readily assimilated by crops.

Recent investigation tends to show that soluble and reverted phosphoric acid are on the whole about equally valuable as plant food, and of nearly equal commercial value. In some cases, indeed, the soluble gives better results on crops, in others the reverted is superior. In most instances there is probably little to choose between them.

Insoluble Phosphoric acid implies various phosphates not soluble in water or ammonium citrate. In some cases the phosphoric acid is too insoluble to be readily available as plant food. This is especially true of the crystallized green Canada Apatite. Bone-black, bone-ash, South Carolina Rock and Navassa Phosphate when in coarse powder are commonly of little repute as fertilizers though good results are occasionally reported from their use. When *very finely pulverized* ("floats") they more often act well, especially in connection with abundance of decaying vegetable matters. The phosphate of calcium in raw bones is nearly insoluble, because of the animal matter of the bones, which envelopes it; but when the latter decays in the soil, the phosphate remains in essentially the "reverted" form. The phosphoric acid of "Thomas-Slag" and of "Grand Cayman's Phosphate" is freely taken up by crops.

Phosphoric acid in all the Station analyses is reckoned as "anhydrous phosphoric acid" (P_2O_5) also termed among chemists, phosphoric anhydride, phosphoric oxide, and phosphorus pentoxide.

POTASSIUM is the constituent of fertilizers, which ranks third in costliness. In plants, soils and fertilizers, it exists in the form of various salts, such as chloride (muriate), sulphate, carbonate, nitrate, silicate, etc. Potassium itself is scarcely known except as a chemical curiosity.

Potash signifies the substance known in chemistry as potassium oxide (K_2O), which is reckoned as the valuable fertilizing ingredient of "potashes" and "potash salts." In these it should be freely soluble in water and is most costly in the form of sulphate, and cheapest in the form of muriate (potassium chloride).

The Valuation of a Fertilizer, as practised at this station, consists in calculating the *retail Trade-value* or *cash-cost* (in raw material of good quality) of an amount of nitrogen, phosphoric acid and potash equal to that contained in one ton of the fertilizer.

Plaster, lime, stable manure and nearly all of the less expensive fertilizers have variable prices, which bear no close relation to their chemical composition, but guanos, superphosphates and similar articles, for which \$30 to \$50 per ton are paid, depend chiefly for their trade-value on the three substances, *nitrogen*, *phosphoric acid* and *potash*, which are comparatively costly and steady in price. The trade-value per pound of these ingredients is reckoned from the current market prices of the standard articles which furnish them to commerce.

The consumer, in estimating the reasonable price to pay for high-grade fertilizers, should add to the *Trade-value of the above named Ingredients*, a suitable margin for the expenses of manufacture, etc., and for the convenience or other advantage incidental to their use.

The average Trade-values or retail cost in market, per pound, of the ordinarily occurring forms of nitrogen, phosphoric acid and potash, as found in New England, New York and New Jersey markets, are as follows :

THE TRADE-VALUES FOR 1892 OF FERTILIZING INGREDIENTS IN RAW MATERIALS AND CHEMICALS.

The average Trade-Values or *retail cost per pound* of the ordinarily occurring forms of nitrogen, phosphoric acid and potash are as follows :

	Cts. per lb.
Nitrogen in ammonia salts.....	17½
nitrates	15
Organic nitrogen in dry and fine ground fish, meat and blood..	16
in cotton seed meal and castor pomace	15
in fine bone and tankage	15
in fine medium bone and tankage.....	12
in medium bone and tankage	9½
in coarser bone and tankage	7½
in hair, horn shavings and coarse fish scrap..	7
Phosphoric acid, soluble in water.....	7½
in ammonium citrate*.....	7
in dry ground fish, fine bone and tank- age.....	7
in fine medium bone and tankage.....	5½
in medium bone and tankage	4½
in coarser bone and tankage	3
Potash as high-grade sulphate and in forms free from muriate (or chlorides).....	5½
as muriate.....	4½

These Trade-values were agreed upon by the Experiment Stations of Massachusetts, New Jersey, Rhode Island, and Connecticut, for use in their respective States during 1892. They are the average prices at which, during the six months preceding March last, the respective ingredients were retailed for cash, in our large markets, in those raw materials which are the regular source of supply. They also correspond to the average wholesale price for the six months ending March 1st, plus about 20 per cent. in case of goods for which we have wholesale quotations. The valuations

* Dissolved from 2 grams of the unground phosphate previously extracted with pure water, by 100 c. c. neutral solution of Ammonium Citrate, sp. gr. 1.09, in 30 minutes, at 65° C., with agitation once in five minutes. Commonly called "reverted" or "backgone" Phosphoric Acid.

obtained by use of the above figures will be found to correspond fairly with the *average retail prices* at the large markets of standard raw materials, such as :

Sulphate of Ammonia,	Muriate of Potash,
Nitrate of Soda,	Sulphate of Potash,
Dried blood,	Plain Superphosphate,
Azotin,	Dry Ground Fish,
Ammonite,	Bone and Tankage,
Ground South Carolina Rock.	

VALUATION OF SUPERPHOSPHATES, SPECIAL MANURES AND MIXED FERTILIZERS OF HIGH GRADE.

The organic nitrogen in these classes of goods is reckoned at the price of nitrogen in raw materials of the best quality.

Insoluble Phosphoric Acid is reckoned at 2 cents per pound. Potash is rated at $4\frac{1}{2}$ cents, if sufficient chlorine is present in the fertilizer to combine with it to make muriate. If there is more Potash present than will combine with the chlorine, then this excess of Potash is reckoned at $5\frac{1}{2}$ cents per pound.

In most cases the valuation of the Ingredients in Superphosphates and Specials falls below the retail price of these goods. The difference between the two figures represents the manufacturer's charges for converting raw materials into manufactured articles and selling them. These charges are for grinding and mixing, bagging or barreling, storage and transportation, commission to agents and dealers, long credits, interest on investments, bad debts, and finally, profits.

The majority of the manufacturers agree that the average cost of mixing, bagging, handling and cartage ranges from \$3.00 to \$4.50 per ton.

In 1892 the average selling price of Ammoniated Superphosphates and Guanos was \$35.28 per ton, the average valuation was \$25.46, and the difference \$9.82, an advance of 27.8 per cent. on the valuation and on the wholesale cost of the fertilizing elements in the raw materials.

In case of Special Manures the average cost was \$38.28, the average valuation \$30.70 and the difference \$7.58 or 25.0 per cent. advance on the valuation.

To obtain the Valuation of a Fertilizer we multiply the pounds per ton of Nitrogen, etc., by the trade-value per pound. We

thus get the values per ton of the several ingredients, and adding them together we obtain the total valuation per ton.

In case of *Ground Bone*, the sample is sifted into four grades and we separately compute the nitrogen-value of each grade by multiplying the pounds of nitrogen per ton, by the per cent. of each grade, taking $\frac{1}{100}$ th of that product, multiplying it by the trade-value per pound of nitrogen in that grade, and taking this final product as the result in cents. Summing up the separate values of each grade thus obtained, together with the values of each grade of phosphoric acid, similarly computed, the total is the Valuation of the sample of bone.

The uses of the "Valuation" are two-fold:

1. To show whether a given lot or brand of fertilizers is worth, as a commodity of trade, what it costs. If the selling price is not higher than the valuation, the purchaser may be tolerably sure that the price is reasonable. If the selling price is twenty to twenty-five per cent. higher than the valuation, it may still be a fair price; but in proportion as the cost per ton exceeds the valuation there is reason to doubt the economy of its purchase.

2. Comparisons of the valuation and selling prices of a number of similar fertilizers will generally indicate fairly which is the best for the money.

But the valuation is not to be too literally construed, for analysis cannot decide accurately what is the *form* of nitrogen, etc., while the mechanical condition of a fertilizer is an item whose influence cannot always be rightly expressed or appreciated.

For the above first-named purpose of valuation, the trade-values of the fertilizing elements which are employed in the computations should be as exact as possible, and should be frequently corrected to follow the changes of the market.

For the second-named use of valuation frequent changes of the trade-value are disadvantageous, because two fertilizers cannot be compared as to their relative money-worth, when their valuations are deduced from different data.

Experience leads to the conclusion that the trade-values adopted at the beginning of a year should be adhered to as nearly as possible throughout the year, notice being taken of considerable changes in the market, in order that due allowance may be made therefor.

The *Agricultural value* of a fertilizer is measured by the benefit received from its use, and depends upon its fertilizing effect, or

crop-producing power. As a broad, general rule, it is true that Peruvian guano, superphosphates, fish-scraps, dried blood, potash salts, etc., have a high agricultural value which is related to their trade-value, and to a degree determines the latter value. But the rule has many exceptions, and in particular instances the trade-value cannot always be expected to fix or even to indicate the agricultural value. Fertilizing effect depends largely upon soil, crop and weather, and as these vary from place to place, and from year to year, it cannot be foretold or estimated except by the results of past experience, and then only in a general and probable manner.

CLASSIFICATION OF FERTILIZERS ANALYZED.

The fertilizers and manurial waste products analyzed at the Station laboratory from November 18th, 1891, to January 1st, 1893, were as follows:

RAW MATERIALS COMMONLY USED IN MIXED FERTILIZERS.

1. *Containing Nitrogen as the Chief Valuable Ingredient.*

Nitrate of Soda	4
Sulphate of Ammonia	1
Dried Blood	1
Cotton Seed Meal	11
Castor Pomace	4

2. *Containing Phosphoric Acid as the Chief Valuable Ingredient.*

"Odorless Phosphate"	1
Phosphate Rock	3
Dissolved Bone Black	4
Dissolved South Carolina Rock	2

3. *Containing Potash as the Chief Valuable Ingredient.*

High Grade Sulphate of Potash	4
Double Sulphate of Potash and Magnesia	2
Muriate of Potash	4
Kainit	2

4. *Containing Nitrogen and Phosphoric Acid.*

Bone Manures	22
Tankage	13
Fish	6

MIXED FERTILIZERS.

Bone and Potash	3
Nitrogenous Superphosphates	65
Special Manures	45
Home Mixtures	18

MISCELLANEOUS FERTILIZERS AND MANURES.

Cotton Hull Ashes	25
Wood Ashes	15
Phosphatic Marl	3
Oyster Shell Lime	1
Soap Factory Refuse	1
Horn Waste	1
Wool Waste	2
Tobacco Dust	1
Muck	3

Total	267
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These analysis are discussed in the order above given. In all cases where the contrary is not stated the samples were drawn by agents of the Station from stock in dealers' hands. The regular retail cash prices are given wherever possible. In many cases the actual cash prices paid by purchasers have been less than those here stated.

I. RAW MATERIALS OF HIGH GRADE CONTAINING NITROGEN AS THE CHIEF VALUABLE INGREDIENT.

NITRATE OF SODA.

Nitrate of Soda is mined in Chili and purified there before shipment. It usually contains about 16 per cent of nitrogen, equivalent to 97 per cent. of pure nitrate of soda. It contains besides, a little salt and some moisture. The usual guarantee is "96 per cent." of nitrate of soda equivalent to 15.8 per cent. of nitrogen.

3457. Sold by National Fertilizer Co., Bridgeport. Sampled by S. E. Cartiss.

3479. Sold by L. Sanderson, New Haven.

3491. Sold by Quinnipiac Co., Boston.

3511. Sold by Mapes F. & P. G. Co., N. Y.

The last three samples were drawn by an agent of the Station.

ANALYSES.

	3457	3479	3491	3511
Moisture.....	.29	1.25	1.08	1.22
Insoluble in water.....	.06	.06	.23	.00
Sodium Chloride, Salt.....	.40	.80	.40	1.06
Sodium Sulphate.....	.20	.25	.22	.16
Pure Sodium Nitrate.....	99.05	97.64	98.07	97.56
	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>
Equivalent Nitrogen.....	16.34	16.11	16.18	16.10
Cost per ton.....	\$16.00	\$50.00	\$50.00	\$48.00
Nitrogen costs cents per pound.....	14.0	15.5	15.4	14.9

SULPHATE OF AMMONIA.

This article, now made on a large scale as a by-product of gas-works, usually contains over 20 per cent. of nitrogen, the equivalent of from 94 to 97 per cent. of sulphate of ammonia. The rest is chiefly moisture. The usual guarantee is 25 per cent. of am-

monia, which is equivalent to 20.6 per cent. of nitrogen, but commercial sulphate of ammonia commonly contains less than that quantity.

A single sample, **3648**, sold by L. Sanderson, New Haven, contained 20.52 per cent. of nitrogen, equivalent to 24.86 per cent. of ammonia and was sold for \$72 per ton, equivalent to **17.5 cents per pound**.

COTTON SEED MEAL.

The seed of the cotton plant, after ginning to remove the fiber, passes through a mill which hulls or decorticates it. The hulled seed is ground and the oil expressed. The ground cake from the presses is used as a cattle food and fertilizer. The hulls are burned for fuel in the oil factory and the ashes, which contain from 20 to 30 per cent. of potash, are also used as a fertilizer.

Sometimes, however, hulls and seed are ground together, making "undecorticated meal" which contains considerably less nitrogen and has correspondingly less money value as a fertilizer or as a feed. When the meal has undergone heating or fermentation, its color changes from a deep yellow to brown or reddish-brown. It is then unfit for cattle food and is sold at a cheaper rate as a fertilizer.

3418. From stock of J. Marsh, New Milford.

3426. From stock of H. K. Brainard, Thompsonville. Sampled by Elam French, Enfield.

3427. Sampled by David French, Enfield.

3441. From stock of Olds & Whipple, Hartford. Sampled by Walter Smith, Windsor.

3442. From stock of Olds & Whipple, Hartford. Sampled by G. H. Fitch, Windsor.

3447. From stock of Olds & Whipple, Hartford. Sampled by E. J. Wells, Windsor.

3451. From stock of E. A. Buck & Co., Willimantic. Sampled by S. O. Griswold, Poquonock.

3469. From stock of Olds & Whipple, Hartford. Sampled by Eugene Brown, Poquonock.

3470. From stock of E. S. Hough, Poquonock. Sampled by Eugene Brown, Poquonock.

3471. From stock of E. S. Hough, Poquonock. Sampled by Eugene Brown, Poquonock.

3495. Breed, Pierce & Co., Boston. From stock of Olds & Whipple, Hartford.

ANALYSES.

	3418	3426	3427	3441	3442	3447	3451	3461	3470	3471	3495
Nitrogen.....	7.12	7.45	7.32	7.52	6.99	6.60	6.91	7.11	7.13	7.15	6.97
Phosphoric acid	3.10	---	---	2.15	2.32	3.30	2.56	2.78	2.79	2.80	2.21
Potash.....	1.80	---	---	.99	1.37	2.13	1.93	1.85	1.90	1.70	1.83
Cost per ton ..	\$29.00	---	---	28.00	27.50	27.00	26.00	26.00	26.00	26.00	25.00
Nitrogen costs											
cents per lb.	15.9	---	---	15.8	16.3	15.2	14.7	14.1	14.0	14.1	14.3

The last sample, **3495**, was damaged meal, sold at a lower price because of its being "off color."

CASTOR POMACE.

The ground residue of castor beans from which castor oil has been extracted.

3566. Made by H. J. Baker & Bro., N. Y. Sampled from stock of F. S. Bidwell, Windsor Locks.

3450. Sold by Bowker Fertilizer Co., Boston, Mass. Sampled from stock of A. D. Bridge by T. J. Stroud, Shaker Station.

3567. Made by Collier Co., St. Louis, Mo. Sampled from stock of F. Ellsworth, Hartford.

3496. Made by Red Seal Castor Oil Co., St. Louis, Mo. Sampled from stock of Olds & Whipple, Hartford.

ANALYSES.

	3566	3450	3567	3496
Nitrogen	4.61	5.32	5.04	5.56
Phosphoric acid	1.34	2.15	1.73	1.70
Potash	1.08	1.25	1.13	.98
Cost per ton	\$23.00	20.00	22.00	22.00
Nitrogen costs per pound in				
cents	21.6	14.7	18.2	16.6

The sample of H. J. Baker & Bro's pomace is evidently damaged. The manufacturers state that it does not at all represent their season's output. The Station endeavored to secure other samples of this brand from the Conn. market but was unable to find them.

II. RAW MATERIALS OF HIGH GRADE CONTAINING PHOSPHORIC ACID.

"ODORLESS PHOSPHATE."

3438. A sample of this material was drawn from stock purchased of Jacob Reese of Phila., by H. Von Tobel, Harwinton. It contained 18.42 per cent. of phosphoric acid and cost \$20.00 per ton.

This is Basic Slag from steel works formerly known as "Thomas-slag."

If Basic Slag could be purchased cheaply enough, it would be well worth the attention of those tobacco growers who endeavor to avoid the use of any but a small quantity of sulphates on their land. While it is relatively an "insoluble" form of phosphoric acid, experience has shown that in many cases it is much more readily available to crops than ground rock phosphate, and on some soils meets the requirements of crops as well as an equal money value of superphosphate. On other soils, however, it does not show this equality. See Reports of this Station for 1887, p. 110, also for 1888, p. 112, and for 1889, p. 203.

DISSOLVED BONE BLACK, DISSOLVED BONE AND ACID PHOSPHATE.

Superphosphates made by treating waste and spent bone black from the sugar refineries, bone dust, or phosphate rock with oil of vitriol which renders the phosphoric acid largely soluble in water.

Dissolved Bone Black.

3455. Sold by the National Fertilizer Co., Bridgeport. Sampled by S. E. Curtiss, Stratford.

3477. Sold by L. Sanderson, New Haven.

3499. Sold by Quinnipiac Co. Stock of Olds & Whipple, Hartford.

Dissolved Bone.

3456. Sold by National Fertilizer Co., Bridgeport. Sampled by S. E. Curtiss, Stratford.

ACID PHOSPHATE.

3689. Sold by Quinnipiac Co., New London. Stock of Olds & Whipple, Hartford.

ANALYSES.

	3455	3477	3499	3456	3689
Phosphoric acid, soluble.....	17.44	16.10	15.46	13.37	6.02
reverted.....	.06	.52	.25	1.59	5.53
insoluble.....	.35	.07	none	.67	1.61
Cost per ton.....	\$20.00	26.00	26.00	15.00	20.00
Soluble phosphoric acid costs per					
pound in cents.....	5.7	7.8	8.3	4.6	4.8

III. RAW MATERIALS OF HIGH GRADE CONTAINING POTASH.

HIGH GRADE SULPHATE OF POTASH.

This material should contain over 90 per cent. of pure sulphate of potash or about the same quantity of actual potash as the muriate, but no more than a trace of chlorine.

3449. Sold by Bowker Fertilizer Co., Boston, Mass. Sampled from stock of A. D. Bridge, Hazardville, by T. J. Stroud, Shaker Station.

3467. Sold by L. Sanderson, New Haven. Sampled by O. B. Phillips, Enfield Bridge.

3481. Sold by L. Sanderson. Sampled by Station agent.

3492. Sold by Quinnipiac Co., New London. Stock of Olds & Whipple, Hartford. For analyses see next table.

DOUBLE SULPHATE OF POTASH AND MAGNESIA.

This material is usually sold as "sulphate of potash" or "manure salts," on a guarantee of "48-50 per cent. sulphate," which is equivalent to 25.9-27 per cent. of actual potash. Besides some 46-50 per cent. of sulphate of potash it contains over 30 per cent. of sulphate of magnesia, chlorine equivalent to 3 per cent. of common salt, a little sulphate of soda and lime, with varying quantities of moisture.

3480. Sold by Quinnipiac Co., New London. Stock of Olds & Whipple, Hartford.

3482. Sold by L. Sanderson, New Haven.

ANALYSES OF HIGH GRADE SULPHATE AND DOUBLE SULPHATE OF POTASH.

	3449	3467	3481	3492	3480	3482
Potash found.....	50.26	51.26	50.34	47.84	26.24	26.23
Equivalent sulphate of potash...	92.94	94.79	93.13	88.5	48.54	48.54
Guaranteed.....	95.0	90.0	----	90.0	48.0	48.0
Cost per ton.....	\$55.00	55.00	55.00	55.00	30.00	30.00
Potash costs per pound in						
cents.....	5.5	5.36	5.46	5.7	5.71	5.71

MURIATE OF POTASH.

Commercial muriate of potash contains about 80 per cent. of muriate of potash (potassium chloride) 15 per cent. or more of common salt (sodium chloride), and 4 per cent. or more of water.

It is generally retailed on a guarantee of 80 per cent. muriate, which is equivalent to 50.5 per cent. of actual potash.

3454. Sold by National Fertilizer Co., Bridgeport. Sampled by S. E. Curtiss, Stratford.

3483. Sold by L. Sanderson, New Haven.

3493. Sold by Mapes Branch, Hartford.

3571. Sold by Quinnipiac Co., New London. Sampled from stock of A. P. Wakeman, Saugatuck. For analyses see next table.

KAINIT.

Kainit is less uniform in composition than the other potash salts. It contains from 11 to 15 per cent. of potash, more than that quantity of soda, and rather less magnesia. These "bases" are combined with chlorine and sulphuric acid. Unless "calcined" it contains more water than the sulphate or muriate of potash. It is usually sold on a guarantee of 12 to 15 per cent. of potash, or 23 to 25 per cent. "sulphate of potash." It cannot properly be called a sulphate of potash, because it contains more than enough chlorine to combine with all the potash present and there is every reason to believe that its potash exists as muriate and not as sulphate.

3572. Sold by Bowker Fertilizer Co., Boston. Sampled from stock of W. H. Anderson, Putnam.

ANALYSES OF MURIATE OF POTASH AND KAINIT.

	3454	3483	3493	3571	3572
Potash.....	50.90	48.65	51.81	51.13	11.93
Equivalent muriate of potash.....	80.4	76.9	81.9	80.8	18.9
Guaranteed		80.0	80.0	80.0	19.7
Cost per ton	\$40.00	42.50	42.50	48.00	16.00
Potash costs per pound in cents	3.9	4.37	4.1	4.7	6.7

IV. RAW MATERIALS CONTAINING NITROGEN AND PHOSPHORIC ACID.

BONE MANURES.

The terms "Bone Dust," "Ground Bone," "Bone Meal" and "Bone" applied to fertilizers, sometimes signify material made from dry, clean and pure bones; in other cases these terms refer to the result of crushing fresh or moist bones which have been thrown out either raw or after cooking, with more or less meat, tendon, and grease—and if taken from garbage or ash heaps, with ashes or soil adhering; again they denote mixtures of bone, blood, meat and other slaughter-house refuse which have been cooked in steam-tanks to recover grease, and are then dried and sometimes sold as "tankage;" or, finally, they apply to bone from which a large share of the nitrogenous substance has been extracted in the glue manufacture. The nitrogen of all these varieties of bone when they are in the same state of mechanical subdivision has essentially the same fertilizing value.

1. *Sampled by Station Agents.*

In the tables on pages 71 and 72 are tabulated 18 analyses.

Sample **3594**, Lister's Celebrated Ground Bone, is a mixture of bone and salt cake or sulphate of soda.

Sample **3552**, Bowker's Bone according to the statement of the manufacturer, is made almost wholly from the head bones of cattle, sheep and calves which are slaughtered at the Brighton abattoir, to which some oil of vitriol is added to prevent heating.

This addition of oil of vitriol causes a part of the finer material to clump together in soft "pebbles." These require to be disintegrated by washing or crushing before a mechanical analysis is made.

The oil of vitriol moreover makes a portion of the phosphoric acid soluble in water. Analyzed as a superphosphate this bone contains :

Phosphoric acid, soluble.....	4.43	per cent.
"reverted"	10.94	"
insoluble	3.26	"

Treated as a superphosphate its valuation will be \$33.60, 48 cents higher than is given in the table.

BONE MANURES SAMPLED BY THE STATION.

FERTILIZERS. BONE MANURES.

71

Station No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3555	Pure Bone Dust.	Peter Cooper's Glue Factory, 17 Burling Slip, N. Y.	Apothecaries Hall Co., Waterbury.	\$28.00
3565	Pure Ground Bone.	H. J. Baker & Bro., 215 Pearl St., N. Y.	J. H. Jennings, Green's Farms.	32.00
3559	Ground Bone.	Plumb & Winton, Bridgeport.	Manufacturer.	30.00
3680	Bone Meal.	Danbury Fertilizer Co., Danbury.	Raymond Bros., South Norwalk.	29.00
			J. B. Beers, Brookfield.	30.00
3553	Fine Ground Bone.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	Manufacturer.	30.00
			H. H. Davenport, Pomfret.	30.00
			S. A. Billings, Meriden.	32.00
3551	Pure Fine Bone.	W. H. Anderson, Putnam.	J. A. Lewis, Willimantic.	31.00
3556	Ground Bone.	L. B. Darling Fertilizer Co., Pawtucket, R. I.	J. E. Holmes, Stratford.	33.00
			Manufacturer.	35.00
			Olds & Whipple, Hartford.	35.00
3561	Swift Sure Bone Meal.	M. L. Shoemaker & Co., Philadelphia, Pa.	J. P. Barstow & Co., Norwich.	34.00
			W. W. Cooper, Suffield.	38.00
3557	Chittenden's Ground Bone.	National Fertilizer Co., Bridgeport.	F. Ellsworth, Hartford.	38.00
3506	Raw Knuckle Bone Flour.	Rogers & Hubbard Co., Middletown.	J. P. Barstow & Co., Norwich.	40.00
			E. P. Matherson, Pomfret.	35.00
3564	Ground Bone.	Downs & Griffin, Ansonia.	Daniel Moriarty, South Meriden.	39.00
3509	Strictly Pure Fine Bone.	Rogers & Hubbard Co., Middletown.	Olds & Whipple, Hartford.	36.00
3552	Fresh Ground Bone.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	Manufacturer.	30.00
			Manufacturer.	32.00
3560	Ground Bone.	Quinnipiac Co., 7 Exchange Place, Boston, Mass.	H. K. Railroad, Thompsonville.	36.00
			J. E. Leonard, Jewett City.	31.00
3593	Self-Recommendng Fertilizer.	F. Nuhn, Waterbury.	A. P. Wakeman, Fairfield.	30.00
3562	Pure Bone Meal.	Williams & Clark Fertilizer Co., 83 Fulton St., N. Y.	G. M. Williams & Co., New London.	35.00
			Apothecaries Hall Co., Waterbury.	35.00
			D. B. Wilson, Waterbury.	35.00
3558	Pure Ground Bone.	Peck Bros., Northfield.	Daniel Morgan, Poquonock Bridge.	34.00
			S. D. Woodruff & Sons, Orange.	32.00
3594	Celebrated Ground Bone.	Lister's Agricultural Chem. Works, Newark, N. J.	D. B. Wilson, Waterbury.	30.00
			Apothecaries Hall Co., Waterbury.	28.00
			W. H. Parmelee, Essex.	32.00

ANALYSES OF BONE MANURES.—SAMPLED BY THE STATION.

Station No.	Name or Brand.	Chemical Analysis.		Mechanical Analysis.				Cost per ton.	Valuation per ton.	Percentage difference between cost and valuation.	Valuation exceeds cost.
		Nitro-gen.	Phos. Acid.	1 30 inch.	1 25 inch.	1 20 inch.	Coarser than 1 2 inch.				
3555	Peter Cooper's Pure Bone Dust.....	1.96	29.54	49	19	20	12	\$28.00	\$38.77		27.7
3565	Baker's Pure Ground Bone	3.50	23.67	62	23	15	-	32.00	39.21		18.4
3559	Plumb & Winton's Ground Bone	4.58	21.25	47	26	16	11	30.00	35.99		16.6
3680	Danbury Fertilizer Co's Bone Meal	3.91	23.03	33	28	34	5	30.00	34.79		13.7
3553	Bradley's Fine Ground Bone	3.50	20.43	58	30	12	-	31.00	34.95		11.3
3551	W. H. Anderson's Pure Fine Bone	1.87	24.82	88	10	2	-	35.00	39.22		10.8
3556	Darling's Ground Bone	2.67	24.75	68	22	10	-	35.00	39.14		10.6
3561	Shoemaker's Swift Sure Bone Meal	5.72	22.35	54	36	10	-	40.00	43.06		7.1
3557	National Fertilizer Co's Ground Bone	1.37	30.55	44	20	22	14	35.00	37.47		6.5
3506	Rogers & Hubbard Co's Raw Knuckle Bone Flour	4.03	24.82	48	43	9	-	39.00	41.14		5.2
3564	Downs & Griffin's Ground Bone	4.31	22.11	28	19	26	27	30.00	31.52		4.8
3509	Rogers & Hubbard Co's Strictly Pure Fine Bone	3.92	22.46	32	24	27	17	32.00	33.35		3.7
3552	Bowker's Fresh Ground Bone*	3.23	18.63	40	32	26	2	33.00	33.12		0.4
3560	Quinnipiac Ground Bone	3.34	21.62	53	28	17	2	35.00	35.03		0.1
3593	Nuhn's Self-Recommendng Fertilizer	4.55	20.57	46	20	18	16	35.00	34.19		2.3
3558	Peck Bros' Pure Ground Bone	4.00	21.02	12	21	35	32	28.00	27.13		3.2
3562	Williams & Clark's Pure Bone Meal	3.52	18.93	54	26	18	2	35.00	32.24		8.6
3594	Lister's Celebrated Ground Bone*	3.98	14.83	36	20	19	25	32.00	24.66		29.7

* See remarks on page 70.

Cost and Valuation.

Excluding 3594, which is a mixture of bone and salts, the average cost of the seventeen brands is \$33.12, and the average valuation is \$35.90, which is a tolerably satisfactory agreement, though the Station valuation is still higher than is fully justified by the state of the market.

2. *Manufacturers' Samples.* 3. *Samples drawn by private individuals.*

Here are given analyses of samples sent to the Station by the manufacturers. No samples of these brands were drawn by the sampling agents, and it is therefore necessary,—to meet the requirement of the law which calls for an annual analysis of each brand—to analyze the samples deposited at the Station by manufacturers. With these is the analysis of one sample drawn by a private individual.

Manufacturers' Samples.

3587. Ground Bone Meal. Made by the Crocker Fertilizer and Chemical Co., Buffalo, N. Y.

3589. Pure Ground Bone. Made by the Crocker Fertilizer and Chemical Co.

3563. Ground Bone. Made by the Rogers Manufacturing Co., Rockfall.

Sampled by private individual.

3462. Ground Bone, made by J. W. Wadsworth, Hartford. Sampled from stock of R. R. Wolcott by John Hamner, Wethersfield.

ANALYSES OF MANUFACTURERS' SAMPLES AND SAMPLE FROM PRIVATE INDIVIDUAL.

MECHANICAL ANALYSES.

	3587	3589	3563	3462
Fine, smaller than $\frac{1}{80}$ inch.....	79	27	28	31
Fine medium, smaller than $\frac{1}{32}$ inch. 13	13	21	28	31
Medium, smaller than $\frac{1}{16}$ inch.....	8	49	42	22
Coarse, larger than $\frac{1}{16}$ inch.....	0	3	2	16
	100	100	100	100

CHEMICAL ANALYSES AND VALUATIONS.

Nitrogen	2.22	4.33	4.13	3.45
Phosphoric acid	28.25	24.92	23.41	23.19
Valuation per ton	\$43.64	36.59	35.18	32.87

TANKAGE.

This name is properly applied only to the sediment remaining in tanks where meat scrap with some bone is rendered to separate the fat. After boiling or superheating with steam, the fat rises to the surface of the water and is removed, the soup is run off, and the settlings at the bottom are dried and sold as tankage. Such material contains as large or larger percentage of nitrogen than of phosphoric acid. But the name tankage is also loosely applied to mixtures that consist largely of bone and do not differ greatly in composition from pure bone.

1. *Sampled by Station Agent.*

3679. Made by Danbury Fertilizer Co., Danbury.

3478. Pulverized Bone and Meat. Sold by L. Sanderson, New Haven.

3502. Sold by Olds & Whipple, Hartford.

3592. Blood, Bone and Meat. Sold by L. Sanderson, New Haven.

2. *Sampled by the Manufacturer.*

3588. Made by D. S. Wadsworth, Hartford.

3. *Sampled by private individuals.*

3694. Made by D. S. Wadsworth, Hartford. Sampled by F. H. Stadtmüller, Elmwood.

3448. From Bowker Fertilizer Co., Boston. Sampled from stock of A. D. Bridge, Hazardville, by T. J. Stroud, Shaker Station.

3578. Sold by Williams & Clark Fertilizer Co., N. Y. Sampled by Andrew Kingsbury, Coventry.

3590. Made by Bartholomew & Co., Meriden. Sampled by J. Norris Barnes, Yalesville. For analyses see page 75.

DRIED FISH.

The samples whose analyses are here given are unacidulated but are analyzed as superphosphates for comparison with other samples of fish to which oil of vitriol has been added to preserve them.

3570. Sold by Bowker Fertilizer Co., Boston, Mass. Sampled from stock of W. F. Andross, East Hartford.

ANALYSES OF TANKAGE.

Station No.	Name or Brand.	Chemical Analysis.		Mechanical Analysis.					Cost per ton.	Valuation per ton.	Per-centage difference.	
		Nitro-gen.	Phos. acid.	Finer than			Coarser than $\frac{1}{8}$ inch.					
				$\frac{1}{32}$ inch.	$\frac{1}{16}$ inch.	$\frac{1}{8}$ inch.						
1. Sampled by Station Agent.												
3679	Danbury Fertilizer Co's Tankage	4.25	20.37	59	29	10	2	\$30.00	\$36.84	18.6		
3478	Sanderson's Pulverized Bone and Meat	5.07	20.81	81	15	3	1	35.00	42.23	17.1		
3502	Olds & Whipple's Tankage	5.82	17.87	77	18	4	1	35.00	40.03	12.5		
3592	Sanderson's Blood, Bone and Meat	6.50	10.68	52	23	20	5	35.00	29.42	Cost exceeds valuation 19.0		
2. Sampled by Manufacturer.												
3588	Wadsworth's Tankage	2.94	24.87	56	17	13	14	---	36.69	---		
3 Sampled by private individuals.												
3694	Wadsworth's Tankage	3.20	24.96	56	17	13	14	---	37.44	---		
3448	Bowker's Tankage	7.32	1.36	*	--	--	--	---	25.32	---		
3518	Williams & Clark's Tankage	5.00	8.79	48	29	18	5	---	23.16	---		
3590	Bartholomew's Tankage	5.34	17.08	40	25	15	20	---	32.65	---		

* Very fine.

3490. Sold by Quinnipiac Co., New London. Sampled from stock of Olds & Whipple, Hartford.

3484. Sold by L. Sanderson, New Haven.

3642. Made by L. Wilcox, Mystic. Sampled from stock of Fred Gallup, New London, J. A. Lewis, Willimantic, H. K. Brainard, Thompsonville, W. W. Cooper, Suffield.

ANALYSES AND VALUATIONS.

	3570	3490	3484	3642
Nitrogen	8.68	8.18	8.77	8.75
Phosphoric acid, soluble .....	.57	none	.67	.56
reverted	5.14	3.55	3.65	4.12
insoluble	1.77	2.64	2.69	2.30
Cost per ton	\$35.00	35.00	35.00	35.00
Nitrogen costs per pound in cents*	15.1	17.5	15.9	15.7

* Allowing $7\frac{1}{2}$, 7, and 2 cents per pound respectively for soluble, reverted and insoluble phosphoric acid.

MIXED FERTILIZERS.

I. BONE AND POTASH.

3595. A 1 Fertilizer, made by C. Buckingham, Southport. Sampled by Station agent from stock of R. C. Wilcox, Guilford.

3591. Circle Brand Bone and Potash, made by Bradley Fertilizer Co., Boston, Mass. Sampled by manufacturer.

3569. Ground Bone and Potash, made by E. Frank Coe, New York. Sampled by Station agent from stock of City Coal and Wood Co., New Britain.

ANALYSES AND VALUATIONS.

MECHANICAL ANALYSES.*

	3595	3591	3569
Fine, smaller than $\frac{1}{60}$ inch.....	58	52	62
Fine medium, smaller than $\frac{1}{25}$ inch.....	21	36	20
Coarse medium, smaller than $\frac{1}{12}$ inch.....	15	12	12
Coarse, larger than $\frac{1}{8}$ inch.....	6	0	6
	100	100	100

CHEMICAL ANALYSES.

Nitrogen.....	4.06	2.66	1.37
Phosphoric acid.....	15.44	17.59	10.26
Potash.....	6.31	5.06	2.90
Valuation per ton.....	\$35.10	34.29	18.89

II. NITROGENOUS SUPERPHOSPHATES AND GUANOS.

Here are included those mixed fertilizers containing nitrogen, phosphoric acid and in most cases potash, which are not designed by their manufacturers for use on any special crop. "Special Manures" are noticed further on.

1. *Samples drawn by Station Agents.*

In the tables on pages 80 to 87 are tabulated the analyses of forty-six brands made on samples collected by the Station agents.

In the table on page 85 is an analysis of Sanderson's Formula A, No. **3596**. Another analysis of this brand previously made on a sample drawn by our agent from stock of E. B. Clark, Milford, No. **3513**, is given below. The manufacturer objected that this did not fairly represent the quality of the brand. Analy-

* In these mixtures the potash salts are washed out before making the mechanical analysis.

sis No. **3596** was then made and also No. **3597**, given below, from another lot of goods. These two later analyses show tolerable agreement and a considerably better quality than the first analysis. See also analyses of this brand on page 91.

OTHER ANALYSES OF SANDERSON'S FORMULA A.

	3513	3597
Nitrogen as nitrates	1.55	1.95
organic	1.92	2.91
Total nitrogen	3.47	4.86
Phosphoric acid, soluble	5.44	4.99
reverted	3.65	3.57
insoluble	1.55	.68
Total	10.64	9.24
Potash as muriate	5.64	7.43
Chlorine	6.88	6.25
Cost per ton	\$35.00	35.00
Valuation per ton	\$29.76	34 60

THE GUARANTEES.

The law of Connecticut requires every package of fertilizer to bear a statement of the actual composition of the goods. This usually expresses the quantities of nitrogen, phosphoric acid and potash within certain limits, as "nitrogen 2-4 per cent."

If a fertilizer with such a guarantee actually contains 2 per cent. of nitrogen, it is within the manufacturer's guarantee.

It is the lowest figures of the guarantee therefore that purchasers should regard.

Of the forty-six brands here reported eleven are below their minimum guarantee in respect of one ingredient, and four in respect of two ingredients. That is, one-third of all the nitrogenous superphosphates in our market contain less of one or of two ingredients than they are claimed to contain.

It is urged that an excess of one ingredient over the guarantee should be held to make good the deficiency of another. But with reasonable care and skill in the manufacture and in the sampling and analysis of the goods the actual analysis should not fall below the minimum guaranteed in any respect particularly when wide limits are allowed in the guarantees themselves.

Comparison of the tables of analyses with those of past years shows that certain brands have about the same composition year after year, while others fluctuate considerably and cannot be depended on to be alike year after year.

COST AND VALUATION.

Cost.

The method used to ascertain the retail cash price of the phosphates is as follows:

The sampling agents inquire and note the price at the time each sample is drawn. The analysis when done is reported to each dealer from whom a sample was taken, with an enclosed postal card addressed to the Station, and a request to note on it whether the retail cash price is correctly given and to mail to the Station.

To each manufacturer is also sent a request that he will notify the Station regarding the probable average cash price at freight centers in Connecticut, of such brands as he sells in the State.

From these data the average prices are computed.

Valuation.

The valuation has been computed in all cases in the usual manner.

Percentage Difference given in the last column of the table shows the percentage excess of the cost price over the average retail cost of the nitrogen, phosphoric acid and potash contained in the fertilizer.

This information puts the purchaser in a position where he can figure as to the probable relative value of the different brands and the probable relative economy of buying fertilizers mixed or unmixed.

Which method of buying is preferable can only be determined by each individual farmer, who should know best what his soil and crops need and what his facilities for purchase and payment are.

No general rule can be given. In one case ready-mixed, in another, home-mixed fertilizers may be found the more profitable to use.

The average cost of the nitrogenous superphosphates, excluding the last two analyses of the table in which cost exceeds valuation by considerably more than fifty per cent., is \$35.28. The average valuation, \$25.46, and the percentage difference 27.8.

Last year the corresponding figures were:

Average cost \$33.93, Average valuation \$28.13, Percentage difference 20.6.

NITROGENOUS SUPERPHOSPHATES AND GUANOS SAMPLED BY THE STATION.

Station No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3620	Pure Fine Dissolved Bone.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	Mapes' Branch, Hartford.	\$32.00
3596	Formula A.	L. Sanderson, New Haven.	Manufacturer.	35.00
3672	X L Fertilizer.	Danbury Fertilizer Co., Danbury.	Manufacturer.	30.00
3512	Old Reliable Superphosphate.	L. Sanderson, New Haven.	E. B. Clark, Milford.	30.00
3637	Complete Manure, A Brand.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	City Coal and Wood Co., New Britain. Wilson & Burr, Middletown.	37.00 36.00
3674	Chittenden's Ammoniated Bone Phosphate.	National Fertilizer Co., Bridgeport.	Mapes' Branch, Hartford. Manufacturer.	35.00 30.00
3621	Complete Manure for General Use.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	S. D. Woodruff & Sons, Orange. T. H. Eldridge, Norwich. E. P. Matherson, Pomfret.	32.00 34.00 33.00
3498	Peruvian Guano.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	D. M. Mitchell, South Britain. Mapes' Branch, Hartford.	32.00 38.00
3616	Animal Fertilizer.	L. B. Darling Fertilizer Co., Pawtucket, R. I.	G. K. Nason, Willimantic. City Coal & Wood Co., New Britain. Mapes' Branch, Hartford.	40.00 40.00 43.00
3529	Farmers' New Method Fertilizer.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	Olds & Whipple, Hartford. F. S. Bidwell, Windsor Locks. W. W. Cooper, Suffield. J. E. Comstock, New London. W. J. Starr, Groton. J. M. Young, Norwich. Wilson & Burr, Middletown. J. A. Lewis, Willimantic. W. F. Andross, East Hartford. S. A. Billings, Meriden.	38.00 36.00 38.00 33.00 34.00 30.00 30.00 30.00 33.00 33.00

Station No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3675	Chittenden's Complete Fertilizer.	National Fertilizer Co., Bridgeport.	D. M. Mitchell, South Britain.	\$40.00
3600	Sea Fowl Guano.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	T. E. Greene, Torrington.	40.00
3631	Market Garden Phosphate.	Quinnipiac Co., 7 Exchange Place, Boston, Mass.	David Fitzgerald, Stratford.	43.00
3638	Ammoniated Bone Phosphate.	Leander Wilcox, Mystic.	F. S. Bidwell, Windsor Locks.	33.00
3524	A. A. Ammoniated Superphosphate.	H. J. Baker & Bro., 215 Pearl St., New York.	W. W. Cooper, Suffield.	38.00
3605	Original Coe's Superphosphate.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	Meeker Bros., Norwalk.	39.00
3613	Standard Phosphate.	Lister's Agricultural Chemical Works, Newark, N. J.	C. A. Young, Danielsonville.	42.00
3530	High Grade Ammoniated Bone Superphosphate.	E. Frank Coe, 16 Burling Slip, New York.	Frederic Gallup, New London.	32.25
3637	Bay State Fertilizer.	Clarke Cove Fertilizer Co., Boston, Mass.	J. A. Lewis, Willimantic.	30.00
3678	Chittenden's Fish and Potash.	National Fertilizer Co., Bridgeport.	H. K. Brainard, Thompsonville.	34.00
			C. M. Smith, East Hartford.	34.00
			New W. F. Andross, East Hartford.	37.00
			A. L. Winton, Bridgeport.	37.50
			E. Hawley, Newtown.	37.50
			S. J. Hall, Meriden.	37.50
			Peck Bros., Northfield.	32.00
			A. N. Clark, Milford.	32.00
			I. W. Denison, Mystic.	32.00
			F. P. Burr, Middletown.	32.00
			J. P. Barstow & Co., Norwich.	32.00
			J. O. Fox & Co., Putnam.	32.00
			Arnold Rudd, New London.	34.00
			H. H. Davenport, Pomfret.	32.00
			T. H. Eldridge, Norwich.	34.00

NITROGENOUS SUPERPHOSPHATES AND GUANOS SAMPLED BY THE STATION.—*Continued.*

Station No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3525	Hill and Drill Phosphate.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	J. H. Larned, Pomfret. B. Curtis & Son, Stepney. C. H. Bell, Portland. E. M. Brewster, Norwich. C. W. Michael & Co., Yalesville.	\$34.00 35.00 38.00 38.00 38.00 37.50
3634	High Grade Farmers' Friend Fertilizer.	Read Fertilizer Co., Box 3121, New York.	C. O. Wolcott, Buckland.	
3577	Ammoniated Bone Fertilizer.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	G. W. Mitchell, South Britain. E. M. Brewster, Norwich. Southington Lumber and Feed Co., Southington.	30.00 32.00 34.00
3579	Gloucester Fish and Potash.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	W. H. Anderson, Putnam. B. Curtis & Son, Stepney.	28.00 30.00
3527	Superphosphate.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	A. C. Sternberg, Hartford. S. A. Billings, Meriden. W. J. Start, Groton. Wilson & Burr, Middletown. J. M. Young, Norwich. J. A. Lewis, Willimantic. W. F. Andross, East Hartford. T. F. Powers, Waterford. Wheeler & Howe, Bridgeport. J. E. Holmes, Stratford. H. K. Brainerd, Thompsonville. Frederic Gallup, New London. C. M. Smith, East Hartford. L. C. Gray, Jewett City.	35.00 37.00 37.00 35.00 35.00 35.00 35.00 35.00 36.00 32.00 31.25 34.00 30.00
3643	High Grade Fish and Potash.	Leander Wilcox, Mystic.		

Station No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3543	Quinnipiac Phosphate.	Quinnipiac Co., 7 Exchange Place, Boston, Mass.	J. E. Leonard, Jewett City. Meeker Bros., Norwalk. C. A. Young, Danielsonville. G. M. Williams & Co., New London. C. A. Young, Danielsonville. John Bransfield, Portland. J. E. Leonard, Jewett City. G. W. Clark, Milford.	\$35.00 36.00 35.00 33.00 35.00 40.00 35.00
3517	Ammoniated Bone Superphosphate.	Crocker Fertilizer Co., Buffalo, N. Y.	F. C. Sturtevant, Hartford. C. T. Leonard, Norwalk. G. W. Mitchell, South Britain. H. K. Brainard, Thompsonville. C. E. Stagg, Stratford.	--- 38.00 30.00 25.00 36.00 34.00
3578	Sure Crop Phosphate.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	D. B. Wilson, Waterbury. F. S. Bidwell, Windsor Locks. Daniel Morgan, Poquonock Bridge. John Bransfield, Portland. W. H. Auderson, Putnam.	36.00 35.00 34.00 36.00 35.00
3541	Ammoniated Bone Superphosphate, Americus Brand.	Williams & Clark Fertilizer Co., 83 Fulton St., New York.	J. P. Kingsley's Sons, Plainfield. S. D. Woodruff & Sons, Orange. T. H. Eldridge, Norwich. Wilson & Burr, Middletown. T. E. Greene, Torrington. D. N. Clark, Shelton. F. S. Bidwell, Windsor Locks. J. F. Elwood, Southport. G. W. Grant, Wapping.	32.00 33.00 32.00 30.00 33.00 36.00 29.00 30.00 32.00
3676	Russell Coe's Superphosphate.	National Fertilizer Co., Bridgeport.		
3582	Farm and Garden Phosphate.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.		
3602	Triangle A Fish and Potash.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.		

NITROGENOUS SUPERPHOSPHATES AND GUANOS SAMPLED BY THE STATION. — *Concluded.*

Station No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3630	Pine Island Phosphate.	Quinnipiac Co., 7 Exchange Place, Boston, Mass.	Olds & Whipple, Hartford.	\$35.00
3619	Alkaline Bono Phosphate.	E. Frank Coe, 16 Burling Slip, New York.	H. L. Hall, 24, Wallingford.	33.00
3610	Soluble Pacific Guano.	Pacific Guano Co., Box 1368, Boston, Mass.	C. H. Lounsbury, Seymour. John Bransfield, Portland.	32.00 36.00
3644	New England Favorite.	J. S. Reese & Co., 10 South St., Baltimore, Md.	R. H. Tucker, Saybrook. L. J. Grant, Wapping.	35.00 35.00
3639	Samson Fertilizer.	Read Fertilizer Co., Box 3121, New York.	Montgomery & Co., Groton.	38.00
3608	Fish and Potash, Plain Brand.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	J. F. Silliman, New Canaan. W. H. Anderson, Putnam.	38.00 38.00
3635	Fish and Potash.	Read Fertilizer Co., Box 3121, New York.	H. W. Morse, Jewett City. E. J. Dickerman, Mt. Carmel.	34.00
3611	King Phillip Alkaline Guano.	Clark's Cove Fertilizer Co., Boston, Mass.	W. Kyle, Bethel.	32.00
3617	New Rival Ammoniated Phosphate.	Crocker Fertilizer Co., Buffalo, N. Y.	H. W. Morse, Jewett City. C. O. Wolcott, Buckland.	29.00 32.00
3609	Gold Brand Excelsior Guano.	E. Frank Coe, 16 Burling Slip, New York.	H. H. Davenport, Pomfret.	28.00
3632	Fish and Potash (Crossed Fishes Brand).	Quinnipiac Co., 7 Exchange Place, Boston, Mass.	W. L. L. Spencer, Lebanon. F. C. Sturtevant, Hartford.	32.00 36.00
3677	Davidge Special Favorite.	Davidge Fertilizer Co., 121 Front St., New York.	E. H. Talcott, Torrington. D. N. Clark, Shelton.	32.00 42.00
3633	Standard Fertilizer.	Read Fertilizer Co., Box 3121, New York.	Olds & Whipple, Hartford. H. S. Benedict, Newtown.	36.00 35.00
			J. F. Silliman, New Canaan. Eli H. Stevens, Brookfield. W. H. Anderson, Putnam. H. W. Morse, Jewett City.	32.00 32.00 32.00 29.00

ANALYSES OF NITROGENOUS SUPERPHOSPHATES AND GUANOS SAMPLED BY THE STATION.

FERTILIZERS. NITROGENOUS SUPERPHOSPHATES.

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Station No.	Name or Brand.	Nitrogen.				Phosphoric Acid.				Potash.		Chlorine.	Cost per Ton.	Valuation per Ton.	Percentage Difference between Cost and Valuation.
		Nitrogen as Nitrates.	Nitrogen as Ammonia.	Nitrogen Organic.	Total Nitrogen.	Nitrogen Guaranteed.	Soluble.	Reverted.	Insoluble.	Total Found.	Total Guaranteed.	Found.	Guaranteed.		
3620	Mapes' Pure Fine Dissolved Bone	---	---	3.00	3.00	2.1	5.90	10.62	1.13	17.65	12.0	16.52	---	\$33.00	*5.2
3596	†Sanderson's Formula A.	1.06	.74	2.44	4.24	3.3	3.65	5.03	2.13	10.81	10.0	8.68	6.0	35.00	.8
3672	Danbury Fertilizer Co's X L Fertilizer	---	---	2.97	2.97	2.1	4.12	7.00	.42	11.54	8.0	11.12	---	30.00	2.6
3512	Sanderson's Old Reliable Superphosphate	---	---	1.82	1.82	1.7	11.74	1.12	.38	13.24	10.0	12.86	7.0	30.00	7.1
3627	Mapes' Complete Manure, A Brand.	.38	.47	2.06	2.91	2.5	9.76	3.31	.30	13.37	12.0	13.07	10.0	36.00	14.0
3674	Chittenden's Ammoniated Bone Phosphate	trace	---	2.66	2.66	1.7	7.20	2.96	1.16	11.32	9.0	10.16	7.0	31.50	19.1
3621	Mapes' Complete Manure for General Use	.78	.86	1.81	3.45	3.3	9.28	1.99	.15	11.42	10.0	11.27	8.0	38.00	19.4
3498	Mapes' Peruvian Guano	---	1.86	1.15	3.01	2.5	2.78	9.30	13.51	25.59	20.0	12.08	---	43.00	21.9
3616	Darling's Animal Fertilizer	.17	.57	2.95	3.69	3.3	4.32	3.03	2.05	9.40	10.0	7.35	---	36.00	23.6
3529	Bradley's Farmers' New Method Fertilizer	---	---	2.34	2.34	1.7	6.92	3.02	1.63	11.57	10.0	9.94	8.0	32.00	24.3
3675	Chittenden's Complete Fertilizer	---	---	3.67	4.21	3.3	4.05	4.13	1.48	9.66	8.0	8.18	6.0	39.50	25.0
3600	Bradley's Sea Fowl Guano	---	---	2.73	2.73	2.5	7.12	3.01	1.38	11.51	11.0	10.13	9.0	33.00	25.8
3631	Quinnipiac Market Garden Phosphate	.12	1.13	2.09	3.34	3.3	6.98	2.40	.09	9.47	9.0	9.38	8.0	40.00	26.4
3638	L. Wilcox's Ammoniated Bone Phosphate	.17	.54	2.55	3.26	2.5	3.81	3.02	1.60	8.43	7.0	6.83	6.0	32.50	26.6
3524	Baker's A. A. Ammoniated Superphosphate	.36	1.81	.91	3.08	2.5	8.99	2.12	.74	11.85	11.0	11.11	10.0	37.50	27.4
3605	Bradley's Original Coe's Superphosphate	---	---	2.44	2.44	1.7	7.12	2.93	1.82	11.87	11.0	10.05	8.0	32.00	27.6
3613	Lister's Standard Phosphate	---	.45	2.15	2.60	1.7	7.14	2.44	1.97	11.55	12.0	9.58	10.0	32.00	27.9

* Valuation exceeds cost.

† See notice on p. 77.

ANALYSES OF NITROGENOUS SUPERPHOSPHATES AND GUANOS SAMPLED BY THE STATION. -- Continued.

Station No.	Name or Brand.	Nitrogen.				Phosphoric Acid.				Potash.		Chlorine.	Cost per Ton.	Valuation per Ton.	Percentage Difference between Cost and Valuation.
		Nitrogen as Nitrates.	Nitrogen as Ammonia.	Nitrogen, Organic.	Total Nitrogen Found.	Nitrogen Guaranteed.	Soluble.	Reverted.	Insoluble.	Total Found.	Total Guaranteed.	Found.	Guaranteed.		
3530	E. F. Coe's High Grade Ammoniated Bone Superphosphate	---	.80	1.44	2.24	2.0	7.52	2.25	1.48	11.25	11.0	9.77	9.0	24.96	28.2
3637	Clark's Cove Fertilizer Co's Bay State Fertilizer	---	---	2.53	2.53	2.7	6.27	3.17	1.97	11.41	10.0	9.44	8.5	24.95	28.3
3678	Chittenden's Fish and Potash	---	---	3.42	3.42	3.3	3.92	2.45	2.00	8.37	6.0	6.37	---	26.49	28.4
3525	Bowker's Hill and Drill Phosphate	.86	---	1.84	2.70	2.5	7.70	3.57	2.55	13.82	12.0	11.27	8.0	27.93	28.9
3634	Read's High Grade Farmers' Friend Fertilizer	---	.39	2.91	3.30	3.3	3.73	2.44	.38	6.55	---	6.17	5.0	29.08	29.0
3577	Bowker's Ammoniated Bone Fertilizer	.83	---	1.53	2.36	2.0	6.56	3.28	3.03	12.87	10.0	9.84	8.0	24.71	29.5
3579	Bowker's Gloucester Fish and Potash	.12	---	.84	.96	.8	9.34	1.32	3.03	13.69	9.0	10.66	6.0	21.48	30.3
3527	Bradley's Superphosphate	.12	---	2.75	2.87	2.3	7.18	3.15	1.37	11.70	11.0	10.33	9.0	26.73	30.9
3613	L. Wilcox's High Grade Fish and Potash	---	.27	3.38	3.65	3.2	3.10	2.25	.73	6.08	6.0	5.35	5.0	23.87	31.9
3543	Quinnipiac Phosphate	trace	---	2.82	2.82	2.5	6.72	3.34	1.33	11.39	10.0	10.06	9.0	26.12	34.0
3547	Crocker's Ammoniated Bone Superphosphate	---	---	2.99	2.99	2.9	5.47	4.68	2.83	12.98	11.0	10.15	10.0	26.43	34.3
3578	Bowker's Sure Crop Phosphate	.06	---	.88	.94	---	7.90	2.25	4.14	14.29	---	10.15	---	20.75	34.9
3541	Williams & Clark's Bone Superphosphate (American Brand)	.07	---	2.62	2.69	2.5	7.04	3.21	.96	11.21	10.0	10.25	9.0	25.85	35.4
3676	National Fertilizer Co's Russell Coe's Superphosphate	---	---	2.07	2.07	1.6	3.74	4.40	5.02	13.16	9.0	8.14	8.0	22.53	35.8

Station No.	Name or Brand.	Nitrogen.						Phosphoric Acid.				Potash.		Chlorine.	Cost per Ton.	Valuation per Ton.	Percentage Difference between Cost and Value.
		Nitrogen as Nitrates.	Nitrogen as Ammonia.	Nitrogen, Organic.	Total Nitro-Gen Found.	Nitrogen Guaranteed.	Soluble.	Reverted.	Insoluble.	Total Found.	Total Guaranteed.	Found.	Guaranteed.				
3582	Bowker's Farm and Garden Phosphate.	.47	---	1.99	2.46	---	6.72	2.07	3.20	11.99	---	2.48	---	4.25	\$33.00	\$24.27	35.9
3602	Bradley's Triangle A Fish and Potash	---	---	2.62	2.62	2.0	4.72	2.38	.73	7.83	6.0	3.72	4.0	7.18	31.00	22.43	38.2
3630	Quinnipiac Pine Island Phosphate	---	---	2.46	2.46	2.1	5.58	4.07	1.10	10.75	10.0	9.65	9.0	2.11	34.00	24.25	40.2
3619	E. F. Coe's Alkaline Bone Phosphate.	---	---	1.51	1.51	.8	6.56	3.33	3.31	13.20	9.0	9.89	7.0	.21	32.00	22.77	40.6
3610	Pacific Guano Co's Soluble Pacific Guano	---	---	2.30	2.30	2.2	7.14	2.85	1.64	11.63	10.5	9.99	8.5	1.98	35.00	24.83	41.0
3644	Reese's New England Favorite Fertilizer	---	---	2.38	2.38	2.4	3.68	6.76	.29	10.73	11.0	10.44	10.0	2.85	35.00	24.68	41.8
3639	Read's Samson Fertilizer	.31	---	2.54	2.85	2.5	6.83	1.03	.46	8.32	9.0	7.86	8.0	5.80	38.00	26.78	41.9
3608	Bowker's Fish and Potash—Plain Brand	---	---	2.17	2.17	2.2	6.72	1.12	4.15	11.99	8.0	7.84	---	3.89	34.00	23.61	44.0
3635	Read's Fish and Potash	---	---	2.54	2.77	2.5	3.26	2.08	.29	5.63	6.0	5.34	4.0	4.35	29.00	19.94	45.4
3611	Clark's Cove Fertilizer Co's King Philip Alkaline Guano	---	---	1.13	1.13	1.3	5.71	2.53	1.53	9.77	9.0	8.24	8.0	.23	28.00	18.98	47.5
3617	Crocker's New Rival Ammoniated Phosphate	---	---	1.49	1.49	1.2	6.77	2.73	2.51	12.01	11.0	9.50	10.0	1.67	32.00	21.19	51.0
3609	E. F. Coe's Gold Brand Excelsior Guano.	---	---	.73	1.41	2.5	6.61	2.04	1.75	10.40	8.0	8.65	6.0	.33	40.00	26.37	51.7
3632	Quinnipiac Fish and Potash—Crossed Fishes Brand	---	.43	2.85	3.28	3.3	1.79	3.41	2.69	7.89	5.0	5.20	3.0	7.43	34.00	22.33	52.2
3677	Davidge Special Favorite Fertilizer	---	---	2.01	2.01	1.2	8.48	1.15	.59	10.22	11.0	9.63	10.0	1.53	35.00	22.45	55.9
3633	Read's Standard Fertilizer	---	---	1.08	1.08	.8	6.90	1.81	.08	8.79	10.0	8.71	8.0	4.82	31.00	19.87	56.1

FISH AND POTASH.—SAMPLED BY THE STATION.

	Chittenden's.	Bowker's Gloucester.	Wilcox's.	Bradley's* Triangle	Bowker's Plain Brand.	Read's.	Quinnipiac Crossed Fishes.
Nitrogen as Ammonia.....	3678	3579	3643	3602	3608	3635	3632
Nitrogen, Organic.....	---	---	.27	---	---	.23	.43
Soluble Phosphoric Acid.....	3.42	.84	3.38	2.62	2.17	2.54	2.85
Reverted Phosphoric Acid.....	3.92	9.34	3.10	4.72	6.72	3.26	1.79
Insoluble Phosphoric Acid.....	2.45	1.32	2.25	2.38	1.12	2.08	3.41
Potash.....	2.00	3.03	.73	.73	4.15	.29	2.69
	5.09	1.51	4.47	3.72	3.73	3.42	3.50
Cost.....	\$34.00	\$28.00	\$31.50	\$31.00	\$34.00	\$29.00	\$34.00
Valuation.....	26.49	21.48	23.87	22.43	23.61	19.94	22.33

* See also analysis of Bradley's Anchor Brand manufacturer's sample on page 91.

FISH AND POTASH.

The samples of Fish and Potash included in the previous tables are tabulated by themselves for comparison on page 88.

2. *Sampled by Manufacturers and 3. Sampled by private individuals.*

(For tabulated analyses see page 91).

2. *Sampled by Manufacturers.*

These samples were sent to the Station in compliance with the terms of the Fertilizer Law and were analyzed because no samples of the brands named were found in market by our sampling agents:

3598. Fish and Potash, Anchor Brand, made by Bradley Fertilizer Co., Boston, Mass.

3647. Buffalo Superphosphate, No. 2, made by Crocker Fertilizer Co., Buffalo, N. Y.

3651. Vegetable Bone Superphosphate, made by Crocker Fertilizer Co., Buffalo, N. Y.

3652. Ammoniated Practical Superphosphate, made by Crocker Fertilizer Co., Buffalo, N. Y.

3650. Garden and Lawn Fertilizer, made by L. B. Darling Fertilizer Co., Pawtucket, R. I.

3654. Success Phosphate, made by Lister's Agricultural Chemical Works, Newark, N. J.

3655. Ammoniated Dissolved Bone, made by Lister's Agricultural Chemical Works, Newark, N. J.

3656. Ammoniated Bone Superphosphate, made by Preston Fertilizer Co., Greenpoint, L. I.

3653. Pilgrim Fertilizer, made by J. S. Reese & Co., Baltimore, Md.

3. *Sampled by private individuals.*

The following analyses were made on samples submitted by private individuals.

3521. Bone Fish and Potash, made by E. R. Kelsey, Branford. Sampled and sent by E. C. Warner, Fair Haven.

3681. Fertilizer made for Conn. Valley Orchard Co., by the Quinnipiac Co., N. Y. Sampled by D. L. Rogers, New Britain.

3537. Formula A, made by L. Sanderson, New Haven. Sampled by F. R. Curtiss, Stratford.

3698. Formula A, made by L. Sanderson, in the fall of 1892.

3699. Formula A, made by L. Sanderson, in the spring of 1892.

The last two samples were drawn by F. H. Todd, North Haven.

III. SPECIAL MANURES.

1. *Sampled by Station Agents.*

For Analyses and Valuations see pages 93 to 100.

Here are included such Nitrogenous Superphosphates as are claimed by their manufacturers to be specially adapted to the needs of particular crops.

NOTICE OF PARTICULAR ANALYSES.

Fairechild's Formula for Corn and General Crops No. **3507** is a mixture of nitrate of soda, muriate of potash and fine bone flour, 90 per cent. of which passes a round mesh $\frac{1}{25}$ inch in diameter.

An analysis **3534** was made of 6 samples of the Quinipiac Potato Manure with the results given below. The manufacturer protested against the analysis because it did not represent the average quality of the goods which should show a much higher per cent. of potash than was indicated in this analysis. The Station, therefore, determined potash separately in each of the samples with the following results:

From Taylor & Hubbell, Newtown	1.79 per cent.
D. C. Wood	5.66 "
Olds & Whipple	5.39 "
W. L. L. Spencer	5.41 "
C. A. Young	5.24 "
G. M. Williams	4.69 "

It is evident that the sample from Taylor & Hubbell is totally unlike the others. A new mixture of samples was, therefore, prepared from which this sample low in potash was excluded. The analysis of this second sample, No. **3684**, is given in the table on page 100.

	3534
Nitrogen, organic	2.71
Phosphoric acid, soluble	5.52
reverted	2.74
insoluble .....	.75
Total	9.01
Potash	4.65
Chlorine	3.41

NITROGENOUS SUPERPHOSPHATES—SAMPLED BY MANUFACTURERS AND BY PRIVATE INDIVIDUALS—ANALYSES
AND VALUATIONS.

	3598	3647	3651	3652	3650	3654	3655	3656	3653	3521	3681	3537	3698	3699
Nitrogen as nitrates.....	---	---	---	---	.98	---	---	---	---	---	.71	---	---	1.36
as ammonia.....	---	---	---	---	.23	.27	.47	.39	.31	.66	---	---	---	---
organic.....	3.85	---	5.70	.82	2.51	1.58	1.72	2.09	1.25	3.34	1.98	---	.89	2.16
Total nitrogen found.....	3.85	---	5.70	.82	3.72	1.85	2.19	2.48	1.56	4.00	2.69	3.54	.89	3.52
NITROGEN GUARANTEED.....	2.2	---	5.0	.82	---	1.0	1.8	2.3	1.0	3.3	---	3.3	3.3	3.3
Phosphoric acid, soluble.....	3.55	10.80	6.35	5.63	4.80	6.38	5.89	4.90	1.68	2.88	6.83	---	14.16	7.10
reverted.....	2.90	1.43	.73	3.41	3.52	2.92	3.49	4.21	7.89	2.09	3.96	---	1.01	3.57
insoluble.....	1.70	.95	.75	1.64	2.00	2.85	2.07	2.24	1.65	.26	1.34	---	.22	.96
Total phosphoric acid found.....	8.15	13.18	7.83	10.68	10.32	12.15	11.45	11.35	11.22	5.23	12.13	9.79	15.39	11.63
PHOSPHORIC ACID GUARANTEED.....	5.0	12.0	7.0	9.0	---	---	11.0	---	7.5	4.0	---	10.0	10.0	10.0
Available phosphoric acid found..	6.45	12.23	7.08	9.04	8.32	9.30	9.38	9.11	9.57	4.97	10.79	---	15.17	10.67
AVAILABLE PHOSPHORIC ACID GUAR.	3.0	11.0	6.0	8.0	---	10.5	9.0	9.0	6.5	---	---	6.0	6.0	6.0
Potash.....	3.84	2.16	6.73	2.17	6.97	1.98	1.89	3.83	2.25	2.83	2.81	7.97	6.37	6.75
POTASH GUARANTEED.....	3.0	1.35	6.0	1.0	---	1.5	1.5	2.0	---	3.0	---	6.0	6.0	6.0
Chlorine.....	1.98	1.95	6.06	2.05	5.61	1.58	1.72	2.08	3.00	.43	2.71	---	6.06	5.48
Valuation.....	\$26.09	20.52	35.15	18.45	30.98	22.59	23.41	25.85	21.34	23.35	27.34	---	31.32	33.10

GUARANTEES.

Of the thirty-nine brands of special manures analyzed, sixteen are below the manufacturer's minimum guarantee in respect of one ingredient, and one is below in respect of two ingredients.

COST, VALUATION AND PERCENTAGE DIFFERENCE.

The average cost per ton of the special manures has been \$38.28, the average valuation \$30.70, and the percentage difference 25.0, a little higher than in case of the nitrogenous superphosphates.

Last year the corresponding figures were: Average cost \$38.84, average valuation \$31.64, percentage difference 22.8.

2. *Sampled by Manufacturers, and 3. Sampled by Private Individuals.*

2. *Manufacturers' Samples.*

These samples were sent to the Station in compliance with the terms of the Fertilizer Law and were analyzed because no samples of the brands named were found in market by our sampling agents.

3599. Complete Manure for Grass and Grain, made by the Bradley Fertilizer Co., Boston, Mass.

3649. Potato and Root Crop Manure, made by Darling Fertilizer Co., Pawtucket, R. I.

3. *Samples drawn by Private Individuals.*

3687. Mapes' Tobacco Manure, Wrapper Brand, from stock of W. H. Filley, Windsor. Sampled by O. P. Parsons, Poquonock.

3688. Fine Wrapper Brand Tobacco Grower, made by Williams and Clark Fertilizer Co., N. Y. Stock of I. J. Beardsley, New Preston. Sampled by G. B. Ackley.

ANALYSES AND VALUATIONS.

	3599	3649	3687	3688
Nitrogen as nitrates.....	5.99	.37	1.51	----
as ammonia.....	----	.23	3.20	2.64
organic.....	----	2.94	1.67	3.33
TOTAL NITROGEN.....	5.99	3.54	6.38	5.97
Phosphoric acid, soluble.....	2.72	4.16	.61	.18
reverted.....	3.70	3.79	3.08	5.49
insoluble.....	1.60	2.69	2.50	5.60
TOTAL PHOSPHORIC ACID.....	8.02	10.64	6.19	11.27
Potash as muriate.....	.36	6.78	.90	1.06
as sulphate.....	2.98	----	10.44	9.58
TOTAL POTASH.....	3.34	6.78	11.34	10.64
Chlorine.....	.27	7.13	.68	.79
Valuation.....	\$31.46	30.05	39.60	41.60

SPECIAL MANURES SAMPLED BY THE STATION.

FERTILIZERS. SPECIAL MANURES.

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Station No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3507	Fairchild's Formula for Corn and General Crops.	Rogers & Hubbard Co., Middletown.	Daniel Moriarty, South Meriden.	\$18.00
3671	Tobacco Fertilizer.	Danbury Fertilizer Co., Danbury.	Manufacturer.	35.00
3673	Potato Manure.	Danbury Fertilizer Co., Danbury.	J. B. Beers, Brookfield.	30.00
3629	Manure for Seeding Down.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	Manufacturer.	35.00
3625	Manure for Fruit and Vines.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	Mapes Branch, Hartford.	37.50
3626	Tobacco Starter.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	Mapes Branch, Hartford.	38.00
3576	Corn Manure.	H. J. Baker & Bro., 215 Pearl St., New York.	Southington Lumber & Feed Co., South- ington.	36.00
3545	Manure for Light Soil.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	F. S. Bidwell, Windsor Locks. Wilson & Burr, Middletown.	37.00 36.00
3508	Soluble Potato Manure.	The Rogers & Hubbard Co., Middletown.	Mapes Branch, Hartford.	35.00
3585	Complete Manure for Potatoes and Vegetables.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	G. K. Nason, Willimantic. Raymond Bros., South Norwalk.	43.00 42.00
3526	Grass and Grain Spring Top Dressing.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	Wilson & Burr, Middletown. J. P. Barstow & Co., Norwich.	43.00 42.00
			Daniel Moriarty, South Meriden.	39.00
			Manufacturer.	38.00
			J. E. Holmes, Stratford.	39.00
			Peck Bros., Northfield.	40.00
			J. P. Barstow & Co., Norwich.	40.00
			G. K. Nason, Willimantic.	41.00
			Wilson & Burr, Middletown.	40.00
			Mapes Branch, Hartford.	39.00

SPECIAL MANURES SAMPLED BY THE STATION.—Continued.

Station No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3575	Complete Tobacco Manure.	H. J. Baker & Bro., 215 Pearl St., New York.	H. K. Brainard, Thompsonville.	\$40.00
			E. Hawley, Newtown.	42.50
			F. S. Bidwell, Windsor Locks.	41.50
3640	Potato, Onion and Tobacco Fertilizer.	Leander Wilcox, Mystic.	W. F. Andross, East Hartford.	42.00
			L. C. Gray, Jewett City.	33.00
			Frederic Gallup, New London.	34.25
3646	Havana and Seed Leaf Tobacco Fertilizer.	Quinnipiac Co., 7 Exchange Place, Boston, Mass.	J. A. Lewis, Willimantic.	32.00
3544	Manure for Corn.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	C. M. Smith, East Hartford.	36.00
			Olds & Whipple, Hartford.	50.00
			F. S. Bidwell, Windsor Locks.	40.00
			G. K. Nason, Willimantic.	40.00
			J. H. Ray & Son, Greenwich.	43.00
			Mapes Branch, Hartford.	39.00
			J. P. Barstow & Co., Norwich.	40.00
3584	Stockbridge Top Dressing.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	C. W. Beardsley, Milford.	42.00
3628	Tobacco Manure—Wrapper Brand.	Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	F. S. Bidwell, Windsor Locks.	
			Southington Lumber & Feed Co., South- ington.	47.50
3603	High Grade Tobacco Manure.	Bradley Fertilizer Co., 27 Kilby St., Bos- ton, Mass.	F. S. Bidwell, Windsor Locks.	49.00
			Mapes Branch, Hartford.	48.00
			F. S. Bidwell, Windsor Locks.	49.00
			G. W. Grant, Wapping.	48.00
3550	Complete Potato Manure.	H. J. Baker & Bro., 215 Pearl St., New York.	Carter & Strong, Manchester.	50.00
			S. J. Hall, Meriden.	42.00
			C. O. Jelliff & Co., Southport.	38.00
			W. F. Andross, East Hartford.	40.00
			E. W. Hawley, Newtown.	42.50

SPECIAL MANURES SAMPLED BY THE STATION.—Continued.

Station. No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3612 3533	Potato and Tobacco Fertilizer. Potato Manure.	Clark' Cove Fertilizer Co., Boston, Mass. Mapes' Formula & Peruvian Guano Co., 143 Liberty St., New York.	W. H. Anderson, Putnam. J. P. Barstow & Co., Norwich. Mapes Branch, Hartford. Wilson & Burr, Middletown. G. K. Nason, Willimantic. C. W. Beardsley, Milford. Wheeler & Howe, Bridgeport. H. L. Vibberts, Manchester. John Bransfield, Portland. S. D. Woodruff & Sons, Orange. S. D. Woodruff & Sons, Orange. F. E. Mirritt, Noank. J. E. Comstock, New London. W. Burr & Son, Fairfield. S. C. Lewis, Stratford. L. Browning, New London. C. W. Michael & Co., Yalesville. C. H. Bell, Portland. J. E. Leonard, Jewett City. E. M. Brewster, Norwich. W. H. Anderson, Putnam. H. K. Brainard, Thompsonville. M. McNamara, New Milford. G. W. Mitchell, South Britain. J. E. Leonard, Jewett City. W. H. Anderson, Putnam. W. L. L. Spencer, Lebanon.	\$32.00 41.00 41.00 42.00 42.50 42.00 45.00 40.00 40.00 37.00 33.00 31.00 32.00 34.00 33.00 42.00 42.00 42.00 40.00 40.00 45.00 40.00 38.00 40.00 36.00 40.00
3641	High Grade Special Fertilizer.	Williams & Clark's Fertilizer Co., 83 Fulton St., New York.		
3549	Great Eastern Vegetable and Tobacco Fertilizer.	Great Eastern Fertilizer Co., Rutland, Vermont.		
3535	Stockbridge Manure for Potatoes and Vegetables.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.		
3583	Tobacco Grower.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.		
3532	Special Potato Manure.	Crocker Fertilizer Co., Buffalo, N. Y.		

SPECIAL MANURES SAMPLED BY THE STATION. — *Continued.*

Station No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3301	Complete Manure for Corn and Grain.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	M. G. Beach & Son, New Milford.	\$41.00
3348	Great Eastern Grass and Grain Fertilizer.	Great Eastern Fertilizer Co., Rutland, Vt.	Strong & Tanner, Winsted. J. E. Comstock, New London. W. Burr & Son, Fairfield. S. C. Lewis, Stratford. F. E. Mirritt, Noank.	38.00 32.00 34.00 33.00
3381	Stockbridge Manure for Corn and Grain.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	Southington Lumber & Feed Co., South- ington. G. H. Larned, Pomfret. G. W. Mitchell, South Britain. J. A. Lewis, Willimantic. Waldo Tillinghast. W. B. Martin, Rockville. J. A. Weed, New Canaan.	41.50 40.00 38.00 40.00 40.00 41.00 42.00
3614	Potato Manure.	Lister's Agricultural Chemical Works, Newark, N. J.	A. N. Clark, Milford.	40.00
3546	Ammoniated Wheat and Corn Phosphate.	Crocker Fertilizer Co., Buffalo, N. Y.	G. W. Clark, Milford. W. L. L. Spencer, Lebanon. J. E. Leonard, Jewett City. W. H. Anderson, Putnam. W. Tillinghast, Plainfield. C. A. Young, Danielsonville. J. O. Fox & Co., Putnam	32.00 31.00 33.00 35.00 33.00 34.00
3618	Potato Fertilizer.	E. Frank Coe, 16 Burling Slip, New York.	City Coal & Wood Co., New Britain. Arnold Rudd, New London.	36.00 38.00

Station No.	Name or Brand.	Manufacturer.	Dealer.	Dealers' cash price per ton.
3684	Potato Manure.	Quinnipiac Co., 7 Exchange Place, Boston, Mass.	D. C. Wood, Stratford. Olds & Whipple, Hartford. W. L. L. Spencer, Lebanon. C. A. Young, Danielsonville. G. M. Williams, New London. B. Curtiss & Son, Stepney. G. H. Larned, Pomfret.	\$38.00 40.00 35.00 36.00 33.00 35.00
3606	Potato Phosphate.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	T. E. Greene, Torrington. F. C. Sturtevant, Hartford. John Bransfield, Portland. J. E. Leonard, Jewett City. W. H. Anderson, Putnam. C. A. Young, Danielsonville. Waldo Tillinghast, Plainfield.	38.00 38.00 36.00 35.00 32.00 35.00 36.00
3531	Potato, Tobacco and Hop Phosphate.	Crocker Fertilizer Co., Buffalo, N. Y.	S. A. Billings, Meriden. Wilson & Burr, Middletown. J. M. Young, Norwich. J. E. Holmes, Stratford. T. F. Powers, Waterford. A. C. Sternberg, Hartford. J. A. Lewis, Willimantic. J. E. Comstock, New London.	38.00 35.00 37.00 35.00 37.00 36.00 36.00
3528	Potato Manure.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	H. K. Brainard, Thompsonville. J. P. Kingsley's Sons, Plainfield. W. H. Anderson, Putnam. D. B. Wilson, Waterbury. C. E. Stagg, Stratford. Daniel Morgan, Poquonock Bridge. J. E. Comstock, New London. E. B. Calkin, Lyme. P. J. Bolan, Waterbury.	32.00 35.00 36.00 36.00 34.00 31.00 32.00 35.00
3542	Potato Phosphate.	Williams & Clark Fertilizer Co., 83 Fulton St., New York.		
3615	General Fertilizer for Oats, Buckwheat and Seeding Down.	Great Eastern Fertilizer Co., Rutland, Vermont.		
3645	Special Potato Fertilizer.	Pacific Guano Co., Box 1368, Boston, Mass.		

ANALYSES OF SPECIAL MANURES SAMPLED BY THE STATION.

Station No.	Name or Brand.	Nitrogen.						Phosphoric Acid.						Potash.		Chlorine.	Cost per Ton.	Valuation per Ton.	Percentage difference between Cost and Valuation.
		Nitrogen as Nitrates.	Nitrogen as Ammonia.	Nitrogen. Organic.	Total Nitrogen Found.	Nitrogen Guaranteed.		Soluble.	Reverted.	Insoluble.	Total Found.	Total Guaranteed.	Found.	Available.	Found.	Guaranteed.			
3507	Fairchild's Formula for Corn and General Crops	3.61	---	2.13	5.74	5.0					13.05	12.0	---	---	13.66	12.0	\$46.00	\$45.11	1.9
3671	Danbury Fertilizer Co's Tobacco Fertilizer	1.78	---	2.89	4.67	3.3		3.04	6.43	1.60	11.07	6.0	9.47	---	4.16	4.5	35.00	33.20	5.4
3673	Danbury Fertilizer Co's Potato Manure	---	---	2.84	2.84	2.9		4.34	6.97	1.10	12.41	8.0	11.31	---	6.71	7.0	35.00	32.22	8.6
3629	Mapes' Manure for Seeding Down	.58	---	2.58	3.16	2.5		---	7.98	8.11	16.09	---	7.98		11.03	10.0	37.50	34.35	9.1
3625	Mapes' Manure for Fruit and Vines	.32	.59	1.68	2.59	1.7		6.32	2.74	.80	9.86	---	9.06		10.75	11.0	38.00	33.67	12.8
3626	Mapes' Tobacco Starter	.38	.61	1.98	2.97	2.5		7.73	4.35	1.06	13.14	12.0	12.08		3.07	2.5	35.00	31.00	12.9
3576	Baker's Corn Manure	---	3.78	.95	4.73	4.9		6.24	.75	.25	7.24	---	6.99		7.40	7.0	38.00	33.56	13.2
3545	Mapes' Manure for Light Soils	1.03	1.68	2.39	5.10	4.9		6.56	2.45	.78	9.79	8.0	9.01		7.07	6.0	42.00	36.56	14.8
3508	The Rogers & Hubbard Co's Soluble Potato Manure	.69	.23	3.97	4.89	5.0		1.82	5.59	2.90	10.31	10.0	7.41		5.28	5.0	38.00	32.97	15.2
3585	Bradley's Complete Manure for Potatoes & Vegetables	.38	1.13	2.12	3.63	3.7		6.86	2.84	1.24	10.94	9.0	9.70		6.45	6.0	38.00	32.92	15.4
3526	Mapes' Grass and Grain Spring Top Dressing	.95	1.05	2.95	4.95	4.2		5.66	2.78	.75	9.19	7.0	8.44		5.54	5.0	39.00	33.64	15.9
3575	Baker's Complete Tobacco Manure	---	3.36	1.15	4.51	4.2		4.42	.94	.08	5.44	---	5.36		10.55	10.0	41.00	34.87	17.5
3640	L. Wilcox's Potato, Onion and Tobacco Fertilizer	.67	.59	2.54	3.80	3.2		3.39	3.92	.46	7.77	8.0	7.31		6.24	6.0	34.00	28.79	18.1

ANALYSES OF SPECIAL MANURES SAMPLED BY THE STATION.

Station No.	Name or Brand.	Nitrogen.					Phosphoric Acid.					Potash.		Chlorine.	Cost per Ton.	Valuation per Ton.	Percentage difference between Cost and Value.		
		Nitrogen as Nitrates.	Nitrogen as Ammonia.	Nitrogen Organic.	Total Nitrogen Found.	Nitrogen Guaranteed.	Soluble.	Reverted.	Insoluble.	Total Found.	Total Guaranteed.	Found.	Guaranteed.						
3646	Quinnipiac Havana and Seed Leaf Tobacco Fertilizer	---	2.17	3.34	5.51	5.7	.32	5.54	4.90	10.76	6.0	5.86	5.0	12.28	10.0	1.05	50.00	41.72	19.8
3544	Mapes' Manure for Corn	.88	.78	2.12	3.78	3.7	6.56	3.34	1.78	11.68	10.0	9.90	8.0	6.37	6.0	5.55	40.00	33.11	20.8
3584	Stockbridge Top Dressing	2.91	---	2.13	5.04	5.0	1.76	5.66	4.91	12.33	6.0	7.42	3.0	5.52	5.0	6.08	40.00	33.04	21.0
3628	Mapes' Tobacco Manure, Wrapper Brand	1.16	3.16	1.89	6.21	6.7	.61	3.49	1.85	5.95	4.5	4.10	---	11.49	10.5	.86	48.00	39.54	21.3
3603	Bradley's High Grade Tobacco Manure	---	3.03	2.73	5.76	5.7	1.68	2.57	1.25	5.50	4.0	4.25	---	10.70	10.8	.80	46.00	37.52	22.6
3550	Baker's Complete Potato Manure	.18	2.62	.93	3.73	3.3	5.01	1.18	.65	6.84	---	6.19	5.0	10.66	10.0	3.54	40.50	32.90	23.1
3612	Clark's Cove Fertilizer Co's Potato and Tobacco Fert.	---	---	2.38	2.38	2.5	7.52	2.61	1.47	11.60	9.0	10.13	8.0	3.05	3.0	3.12	32.00	25.89	23.6
3533	Mapes' Potato Manure	.83	.78	2.15	3.76	3.7	6.90	2.21	.55	9.66	8.0	9.11	8.0	7.45	6.0	.44	42.00	33.84	24.1
3641	Williams & Clark's High Grade Special for Potatoes, Tobacco, etc.	.24	1.19	2.22	3.65	3.7	6.00	2.74	.93	9.67	8.0	8.74	7.0	7.13	7.0	5.35	40.00	31.63	26.4
3549	Great Eastern Vegetable and Tobacco Fertilizer	.05	---	2.20	2.25	2.1	7.57	.95	.84	9.36	9.0	8.52	8.0	6.28	6.0	5.83	33.00	25.87	27.5
3535	Stockbridge Manure for Potatoes and Vegetables	1.54	---	2.11	3.65	3.2	5.66	2.95	2.14	10.75	8.0	8.61	7.0	6.66	5.0	7.21	40.00	30.83	29.7
3583	Bowker's Tobacco Grower	.91	---	1.67	2.58	2.5	6.99	2.77	1.18	10.94	12.0	9.76	8.0	6.45	7.0	2.47	39.00	29.35	32.8
3532	Crocker's Special Potato Manure	---	.20	3.47	3.67	3.7	6.16	1.20	2.27	9.63	9.0	7.36	8.0	6.09	5.4	6.15	39.00	29.11	33.9

ANALYSES OF SPECIAL MANURES SAMPLED BY THE STATION.

Station No.	Name or Brand.	Nitrogen.					Phosphoric Acid.					Potash.			Chlorine.	Cost per Ton.	Valuation per Ton.	Percentage difference between Cost and Value.	
		Nitrogen as Nitrates.	Nitrogen as Ammonia.	Nitrogen, Organic.	Total Nitrogen Found.	Nitrogen Guaranteed.	Soluble.	Reverted.	Insoluble.	Total Found.	Total Guaranteed.	Available.		Found.					Guaranteed.
3604	Bradley's Complete Manure for Corn and Grain	.29	.60	2.29	3.18	2.9	7.60	2.90	.76	11.26	9.0	10.50	8.0	4.19	3.0	4.29	29.83	34.0	
3548	Great Eastern Grass and Grain Fertilizer	trace	---	2.95	2.95	2.9	7.42	1.27	.76	9.45	9.0	8.69	8.0	2.11	2.0	4.10	24.55	34.4	
3581	Stockbridge Manure for Corn and Grain	1.15	---	2.01	3.16	3.2	7.12	3.14	1.51	11.77	9.0	10.26	8.0	4.46	7.0	4.11	29.57	35.2	
3614	Lister's Potato Manure	---	1.56	2.23	3.79	3.7	5.92	1.11	.74	7.77	7.0	7.03	---	6.51	7.0	5.93	29.18	37.1	
3546	Crocker's Ammoniated Wheat & Corn Phosphate	---	---	2.25	2.25	2.0	6.91	2.77	2.63	12.31	10.0	9.68	9.0	1.61	1.6	2.00	23.95	37.8	
3618	E. F. Coe's Potato Fertilizer	---	.70	1.63	2.33	2.0	6.05	2.39	1.67	10.11	---	8.45	8.0	4.96	5.8	.71	26.04	38.2	
3684	Quinnipiac Potato Manure	---	---	2.78	2.78	2.5	4.64	2.83	1.30	8.77	7.0	6.47	6.0	5.29	5.0	3.83	25.14	43.1	
3606	Bowker's Potato Phosphate	.70	---	1.78	2.48	2.5	6.85	1.80	3.43	12.08	11.0	8.65	7.0	2.43	3.0	3.51	24.15	44.9	
3531	Crocker's Potato, Tobacco and Hop Phosphate	---	---	2.15	2.15	2.0	6.26	2.81	2.35	11.42	11.0	9.07	10.0	3.21	3.5	3.63	24.03	45.6	
3528	Bradley's Potato Manure	.21	---	2.63	2.84	2.5	4.67	2.30	1.50	8.47	8.0	6.97	6.0	5.26	5.0	6.59	24.61	46.2	
3542	Williams & Clark's Potato Phosphate	---	---	2.56	2.56	2.5	5.17	2.11	.78	8.06	7.0	7.28	6.0	5.64	5.0	3.09	24.59	46.4	
3615	Great Eastern Fertilizer for Oats, Buckwheat and Seeding Down	trace	---	1.41	1.41	0.8	7.20	1.10	.90	9.20	9.0	8.30	8.0	4.59	4.0	5.95	21.34	49.9	
3645	Pacific Guano Co's Special Potato Fertilizer	---	.31	2.56	2.87	3.0	3.25	2.74	1.71	7.70	7.0	5.99	5.0	4.92	5.0	5.74	23.11	51.4	

HOME MIXED FERTILIZERS.

Following are the formulas, analyses and valuations of all the Home mixtures which have been received at this Station for analysis during the past season.

The prices quoted except in the case of **3443** are *regular market retail rates*, at which the goods can be bought without discounts. In most cases special and much lower prices were paid partly on account of large orders and cash payments.

The mechanical condition of most of these mixtures was excellent, being as fine and as dry as average factory-mixed goods.

The average cost of the raw material used in the mixtures, excluding **3443** was \$33.25 at regular market rates, disregarding discounts, which most of the purchasers received. If we add to this \$1.50 for freight and \$2.00 per ton for mixing, an allowance which is very ample, the total average cost will be \$36.75 per ton. The average valuation is \$33.16 per ton, and the percentage difference between cost and valuation \$10.8.

The percentage differences between cost and valuation in case of the factory-mixed superphosphates and special manures this year is more than twice as large, indicating that there was in these cases great economy in home-mixing.

3443. Made by S. E. Curtiss, Stratford.

FORMULA.

2530	pounds	Muriate of Potash.
800	"	Nitrate of Soda.
6400	"	Dissolved Bone.
1400	"	Dissolved Bone Black.
4500	"	Tankage.
<hr/>		"
15630	"	

Costing \$176.00 or \$22.52 per ton.

3476. For General Use, made by J. Norris Barnes, Yalesville.

300	pounds	Nitrate of Soda.
1000	"	Pulverized Bone and Meat.
4000	"	Blood, Bone and Meat.
1200	"	Raw Bone.
800	"	Dissolved Bone Black.
1125	"	Muriate of Potash.
800	"	Double Sulphate Potash and Magnesia.
<hr/>		"
9225	"	

Costing \$35.27 per ton delivered at Yalesville at regular rates.

3486. For General Use, made by N. D. Platt, Milford.

2000	pounds Tankage.
2000	" Dissolved Bone Black.
500	" Ground Bone.
500	" Sulphate of Ammonia.
500	" Muriate of Potash.
500	" Double Sulphate of Potash.
<hr/>	
6000	"

Costing, at regular rates, \$35.00 per ton in Milford.

3487. For General Use, made by R. M. Treat, Woodmont.

450	pounds Tankage.
170	" Sulphate of Ammonia.
1000	" Dissolved Bone Black.
280	" Muriate of Potash.
100	" Bone Black.
<hr/>	
2000	"

Costing, at regular rates, \$34.67 per ton.

3488. Made by G. F. Platt, Milford.

800	pounds Blood, Bone and Meat.
400	" Ground Bone.
550	" Dissolved Bone Black.
50	" Sulphate of Ammonia.
100	" Nitrate of Soda.
50	" Sulphate of Potash.
50	" Muriate of Potash.
<hr/>	
2000	"

Costing, at retail rates \$34.51 per ton.

3489. For general use. Made by W. L. and S. T. Merwin, Milford.

170	pounds Muriate of Potash.
950	" Dissolved Bone Black.
580	" Tankage.
175	" Sulphate of Ammonia.
125	" Ground Bone.
<hr/>	
2,000	" Costing, at regular rates, \$34.60 per ton.

3503. For general use. Made by N. E. Smith & Son, Woodmont.

475	pounds Tankage.
145	" Sulphate of Ammonia.
1,000	" Dissolved Bone Black.
280	" Muriate of Potash.
100	" Bone Black.
<hr/>	
2,000	" Costing, at regular rates, \$34.09 per ton.

3504. For Potatoes. Made by T. J. Stroud, Shaker Station.

500	pounds	Castor Pomace.
600	"	Tankage.
300	"	High grade Sulphate of Potash.
100	"	Nitrate of Soda.
400	"	Dissolved Bone Black.
100	"	Plaster.
<hr/>		
2,100	"	Costing about \$30.25 per ton.

3505. For Oats. Made by T. J. Stroud, Shaker Station.

700	pounds	Castor Pomace.
800	"	Tankage.
200	"	Muriate of Potash.
300	"	Nitrate of Soda.
100	"	Plaster.
<hr/>		
2,100	"	Costing about \$30.60 per ton.

3517. Made by E. Kingsbury, Coventry.

1,000	pounds	Tankage.
400	"	Muriate of Potash.
400	"	Dissolved Bone Black.
300	"	Nitrate of Soda.
<hr/>		
2,100	"	Costing \$36.00 in Coventry, allowing \$1.00 for mixing.

3519. For Corn. Made by G. F. Platt, Milford.

200	pounds	Nitrate of Soda.
300	"	Ground Bone.
800	"	Dissolved Bone Black.
600	"	Blood, Bone and Meat.
100	"	Muriate of Potash.
<hr/>		
2,000	"	Cost at regular rates, \$32.82 per ton in Milford.

3520. For Potatoes. Made by Dennis Fenn, Milford.

12	bushels	Unleached Ashes.
200	pounds	Dissolved Bone Black.
400	"	Blood, Bone and Meat.
100	"	Nitrate of Soda.

3539. Made by S. O. Parker, Somerville.

662	pounds	Tankage.
662	"	Dissolved Bone Black.
534	"	Double Sulphate of Potash and Magnesia.
142	"	Sulphate of Ammonia.
<hr/>		
2,000	"	Costing unmixed, \$34.00 per ton.

3540. For Corn. Made by Dennis Fenn, Milford.

700	pounds	Blood, Bone and Meat.
500	"	Dissolved Bone Black.
500	"	Bone.
200	"	Nitrate of Soda.
180	"	Muriate of Potash.
<hr/>		
2,000	"	Costing, at regular rates, \$36.83.

3574. For Oats and Seeding Down. Made by Stephen Hoyt's Sons, New Canaan.

1,000	pounds	Bone Dust.
600	"	Double Sulphate of Potash and Magnesia.
200	"	Muriate of Potash.
200	"	Nitrate of Soda.
<hr/>		
2,000	"	Costing \$36.25 per ton at regular rates.

3586. For Corn. Made by T. J. Stroud, Shaker Station.

800	pounds	Castor Pomace.
900	"	Tankage.
200	"	Muriate of Potash.
100	"	Nitrate of Soda.
100	"	Plaster.
<hr/>		
2,100	"	Costing about \$31.00 per ton at regular rates.

3601. Special for Corn. Made by Dennis Fenn, Milford.

25	bushels	Hen Manure.
400	pounds	Land Plaster.
200	"	Dissolved Bone Black.
100	"	Muriate of Potash.

3607. For Corn. Made by N. E. Smith & Son.

600	pounds	Blood, Bone and Meat.
300	"	Ground Bone.
800	"	Dissolved Bone Black.
200	"	Nitrate of Soda.
100	"	Muriate of Potash.
<hr/>		
2,000	"	Costing, at regular rates, \$32.82 per ton.

HOME MIXED FERTILIZERS.—ANALYSES AND VALUATIONS.

HOME MIXED FERTILIZERS.

105

Station No.	Name.	Nitrogen.				Phosphoric Acid.				Potash.		Chlorine.	Valuation, Per Ton.	Cost of Raw Mate- rials per ton, de- livered.
		As Nitrates.	As Ammonia.	Organic.	Total Found.	Total Calculated.	Soluble.	Reverted.	Insoluble.	Total Found.	Total Calculated.			
3443	S. B. Curtiss, Home Mixture----	.72	----	1.53	2.25	----	7.06	1.90	1.27	10.23	----	----	\$27.68	*22.52
3476	J. N. Barnes, Mixture for Gen'l Use	.43	----	3.67	4.10	4.5	1.58	4.79	3.74	10.11	11.5	5.75	34.27	35.27
3486	N. D. Platt, Mixture for Gen'l Use,	----	1.77	2.07	3.84	3.7	6.34	3.59	3.03	12.96	14.5	4.06	34.12	35.00
3487	R. M. Treat, Mixture for Gen'l Use,	----	1.76	1.24	3.00	3.1	8.99	1.80	2.51	13.30	14.2	7.61	33.98	34.67
3488	G. F. Platt, Mixture for Potatoes,	.63	.58	2.94	4.15	4.4	5.14	5.02	5.47	15.63	13.7	1.24	31.94	34.51
3489	W. L. & S. T. Merwin, Mixture for General Use,	----	1.46	1.99	3.45	3.9	9.46	2.91	1.74	14.11	12.6	4.86	34.53	34.60
3503	N. E. Smith & Son, Mixture for Gen'l Use.	----	2.10	1.37	3.47	3.2	9.63	1.95	1.66	13.27	12.1	5.01	35.87	34.09
3504	T. J. Stroud, Mixture for Potatoes,	.56	----	3.30	3.86	----	4.37	.76	.18	5.31	----	.41	27.80	30.25
3505	T. J. Stroud, Mixture for Oats,--	2.39	----	4.60	6.99	6.8	.90	1.00	.06	1.96	1.3	3.97	28.87	30.60
3517	E. Kingsbury, Home Mixture,--	2.23	----	2.31	4.54	5.0	2.76	3.03	1.18	6.97	8.7	10.12	32.04	36.00
3519	G. F. Platt, Mixture for Corn,--	1.46	----	2.39	3.85	4.1	7.50	4.59	2.78	14.87	13.5	2.50	33.08	32.82
3520	Dennis Fenn, Mixture for Potatoes,	1.63	----	2.22	3.85	----	1.43	1.85	5.57	8.85	----	trace.	21.59	----
3539	S. O. Parker, Home Mixture,--	----	1.37	2.39	3.76	3.9	4.48	2.39	1.42	8.29	6.1	.72	38.60	34.00
3540	Dennis Fenn, Mixture for Corn,--	1.26	----	2.72	3.98	4.6	4.35	5.91	4.21	14.47	13.5	32.62	36.83	----
3574	Stephen Hoyt's Sons, Mixture for Oats and Seeding Down,----	2.79	----	2.42	5.21	3.2	----	----	----	9.98	9.3	2.25	39.17	36.25
3586	T. J. Stroud, Mixture for Corn,--	.92	----	3.34	4.26	5.9	3.68	.86	trace.	4.54	1.4	5.73	26.02	31.00
3601	Dennis Fenn, Mixture for Corn (Special),	----	----	1.05	1.05	----	1.09	2.04	----	3.13	----	----	11.62	----
3607	N. E. Smith & Son, Mixture for Corn,	1.52	----	2.14	3.66	4.1	7.36	5.04	.92	13.30	13.6	4.32	34.40	32.82

* Not at regular market rates.

MISCELLANEOUS FERTILIZERS AND MANURES.

COTTON-HULL ASHES.

The analyses of 25 samples of this material are tabulated on page 107.

Samples **3473** and **3636** represent damaged or refuse stock, sold as such by Messrs. Soper & Co., on the basis of the Station's analysis, and at a very low price.

Excluding these two analyses, the actual potash in Cotton-Hull ashes has cost as high as 11.4 cents per pound, as low as 3.2 cents per pound, and on the average 5.3 cents.

The per cent. of potash has ranged from 31.3 to 11.3, and the average has been 24.1 per cent.

UNLEACHED ASHES.

From various Dealers.

3497. From W. E. Fyfe & Co., Clinton, Mass. Sampled by Station agent from stock of A. C. Sternberg, Hartford.

3715. From James Hartness Soap Co., Detroit, Mich. Sampled by J. N. Barnes from stock bought by him.

3522. From Forest City Hardwood Ash Co. Sampled by E. C. Warner, Fair Haven, from stock purchased by him.

3705. From Forest City Hardwood Ash Co. Sampled and sent by H. G. Swift, West Hartford.

Sold by Chas. Allison & Co., New York City.

3417. Sampled by L. S. Ellsworth, Simsbury.

3428. Sampled by W. H. Whitehead, Simsbury.

3445. Sampled by Jay Barnard, Simsbury.

3692. Sampled by C. S. Gillette, Cheshire.

Sold by F. R. Lalor, Dunnville, Ontario, Canada.

3416. Sampled by Station agent.

3437, 3538. Two samples from the same pile, drawn by T. J. Stroud, Shaker Station.

3439 and 3440. Sampled by C. F. Smith, Orange.

3693. Sampled by Station agent from goods purchased by E. J. Peck, Stratford.

3695. Sampled by Julius Moss, West Cheshire.

3696. Sampled by C. C. Hart, Southington.

ANALYSES OF COTTON HULL ASHES.

Station No.	Dealer or Purchaser.	Sampled by.	Soluble Phosphoric Acid.	"Reverted" Phosphoric Acid.	Insoluble Phosphoric Acid.	Potash in Soluble Water.	Cost per ton.	Valuation per ton.	Potash, costs per pound in cents.
3460	H. K. Brainard, Thompsonville.	R. L. Clapp, Thompsonville.	2.08	7.64	1.03	28.26	\$36.00	\$49.00	3.2
3423	T. Soule & Co., New Milford.	E. A. Wildman, New Milford.	2.96	6.69	1.63	31.34	35.00	49.93	3.3
3463	H. K. Brainard, Thompsonville.	James Wood, West Suffield.	1.84	7.63	1.46	26.14	33.00	42.78	3.6
3444	H. K. Brainard, Thompsonville.	G. F. Chapin, Thompsonville.	2.34	6.15	2.72	28.96	36.00	45.07	3.9
3424	T. Soule & Co., New Milford.	E. A. Wildman, New Milford.	2.24	6.23	1.38	27.53	35.00	42.91	4.1
3453	Olds & Whipple, Hartford.	H. S. Frye, Poquonock.	2.64	7.06	2.75	29.42	40.00	47.30	4.3
3475	I. L. Spencer, Suffield.	C. W. Austin, Suffield.	1.47	6.27	2.17	27.00	35.00	41.56	4.3
3472	Olds & Whipple, Hartford.	Eugene Brown, Poquonock.	2.40	7.10	1.89	25.88	37.00	42.77	4.4
3446	Olds & Whipple, Hartford.	E. J. Wells, East Windsor Hill.	2.37	7.37	2.82	28.46	40.00	46.31	4.4
3434	W. J. Barber, Canton.	W. J. Barber, Canton.	1.17	7.46	2.03	28.37	40.00	44.23	4.7
3435	W. J. Barber, Canton.	W. J. Barber, Canton.	1.28	6.01	2.94	24.18	35.00	38.11	4.8
3468	Olds & Whipple, Hartford.	Eugene Brown, Poquonock.	1.04	8.82	2.55	25.82	40.00	43.33	4.8
3414	Olds & Whipple, Hartford.	Olds & Whipple, Hartford.	.59	7.77	1.53	22.07	35.00	36.67	5.1
3425	I. L. Spencer, Suffield.	L. F. Woodworth, Thompsonville.	1.04	7.51	2.94	20.44	35.00	35.73	5.3
3573	F. W. Rising, West Suffield.	F. C. Root, Suffield.	1.22	7.61	3.09	24.62	42.00	40.81	5.7
3701	Eugene Brown, Poquonock.	Eugene Brown, Poquonock.	.60	6.71	.77	25.83	40.00	39.01	5.7
3465	D. L. Brockett, Suffield.	D. L. Brockett, Suffield.	.50	6.85	1.41	21.54	36.00	34.59	5.8
3433	Chas. L. Austin, Suffield.	F. C. Root, Suffield.	1.02	6.08	2.17	21.40	37.00	34.45	6.1
3452	G. H. & J. H. Hale, Glastonbury.	S. O. Griswold, Poquonock.	1.34	5.67	2.67	20.90	37.00	34.01	6.2
3436	E. S. Clark, Hartford.	E. S. Clark, Hartford.	---	4.23	1.81	21.00	33.00	29.74	6.3
3422	A. D. Bridge.	W. P. Henry, Sctico.	.64	8.22	2.05	17.22	35.00	32.23	6.3
3623	Seth Viets, West Suffield.	F. C. Root, Suffield.	.74	6.75	2.07	16.02	42.00	29.01	9.5
3622	Seth Viets, West Suffield.	F. C. Root, Suffield.	.80	5.60	3.00	11.27	36.00	22.63	11.4
3473	J. E. Soper & Co., Boston, Mass.*	Arthur Sikes, Suffield.	.24	3.40	1.30	7.02	---	---	---
3636	J. E. Soper & Co., Boston, Mass.*	Arthur Sikes, Suffield.	.93	3.17	1.57	8.67	---	13.36	---
							---	16.01	---

* See note on page 106.

ANALYSES OF UNLEACHED CANADA ASHES.

	3497	3715	3522	3705	3417	3428	3445	3692	3416	3437	3538	3439	3440	3693	3695	3696
Potash, soluble in water.	3.34	4.68	3.59	2.66	4.36	4.36	5.40	5.39	4.92	4.21	4.17	4.30	4.76	4.70	3.14	6.34
Potash, total.	---	---	---	4.71	---	---	---	7.46	---	---	5.02	---	---	6.09	3.75	8.15
Phosphoric acid.	1.15	1.44	1.05	1.38	1.47	1.03	1.41	.90	1.73	1.00	1.16	---	---	1.41	.83	1.47
Cost per ton.	\$12.00	10.00*	11.50	11.00*	12.00	12.00	12.00	---	12.00	11.00	11.00	12.00	12.00	12.00	---	11.00

* In car lots.

NOTES OF CERTAIN SAMPLES.

3705 was bought on agreement that the ashes were to be dry, weighing 40 to 50 pounds per bushel. The actual weight proved to be 85 pounds per bushel.

The full analysis was as follows :

Water	42.29
Sand and silica	2.61
Charcoal .....	.75
Potash, soluble in water, (mostly carbonate).....	1.54
Potash, only soluble in acids, (as silicates).....	2.73
Phosphoric acid.....	.80
Lime, magnesia, oxide of iron, alumina, soda, sulphuric acid, and carbonic acid, not separately determined, }	49.28
	<hr/> 100.00

3437 and **3538** were bought on a guarantee of "five per cent. potash." It is seen that while the ashes contain 5.02 per cent. of actual potash, only about 4.2 per cent. is soluble in boiling water. The rest exists in the form of silicates, quite insoluble in water and much less readily available to plants.

3439 and **3440** represent small samples drawn from two places in a car load of ashes, and there is no proof that they represent the average quality of the whole.

Attention is again called to the Station's instructions for sampling ashes. A strict adherence to them is necessary in order to secure a *fair sample*, without which a chemical analysis is worse than useless. These are as follows:

INSTRUCTIONS FOR SAMPLING ASHES.

In case of Fertilizers in bulk as Canada Ashes or Cotton Hull Ashes, it is needful that at least 20 or 30 small portions, cupfuls,* be taken from as many different parts of the car load or heap—from its top, center and bottom, and from each end and side. These should be thrown into a clean box or barrel and thoroughly intermixed, *and of this mixture 1 quart* should be put in a sealed jar for analysis.

* A shovel may be used if the material is a moist and coherent powder, but in cases of dry and lumpy fertilizers a cup or deep scoop should be used and all heaping, which allows the lumps to roll away from the finer substance, should be avoided.

Ashes must be sampled before exposure to rain or sun as their composition is liable to considerable alteration by such exposure.

The sample *must* be described and its correctness certified on a blank form which the Station will send as requested.

“FOSSILIFEROUS PHOSPHATIC MARL.”

“NATURAL PLANT FOOD.”

A sample of material, **3747**, bearing this name, was brought to this Station by Alpheus Winter, of Middletown, general agent of The Southern Phosphate Co. of Richmond, Va. The circulars accompanying the sample describe it as phosphatic marl, which is obtained from the valley of the Pamunkey River in Virginia, and is said to be used in that State as a fertilizer with wonderful results.

The Station is informed that it is being introduced here and sold in considerable quantities at \$9.75 per ton.

The published analyses of different strata of the marl show from 6.4 to 14.6 per cent. of phosphoric acid and from .35 to 2.66 per cent. of potash. Evidently it is not of very uniform composition.

The sample above referred to had the following composition:

Potash.....	23
Lime.....	8.10
Magnesia.....	.55
Oxide of iron and alumina.....	3.81
Sand and silica.....	68.86
Carbonic acid.....	5.60
Phosphoric acid.....	1.69
Sulphuric acid.....	.76
Water.....	8.93
Undetermined matters.....	1.47
	<hr/>
	100.00

The Station is informed that this sample represents the average quality of shipments about to be made.

The analysis shows that more than eighty per cent. of the sample consists of sand, silica and moisture, matters of no value whatever in a fertilizer. The phosphoric acid is insoluble in water, and for the most part insoluble in ammonium citrate, and it is probably about as available to plants as that of the phosphatic guanos. The phosphatic and potash-yielding marls have

been used with great success in New Jersey and Virginia for years, where they could be had at a cost of very little more than the carting, and were applied in large quantities, and it is likely that many of our soils would respond satisfactorily to heavy applications of this marl.

Whether at the price asked the marl can profitably be used by Connecticut farmers is a question to be settled by practical trials; whether the shipments can be made of uniform quality further analyses must determine.

PHOSPHATIC MARL.

Below are given two analyses of marl; one sample **3685**, taken near the surface, the other, **3686**, six feet below the surface. These were drawn near Richmond, Va., by Capt. J. K. Bucklyn, of Mystic, Conn., and are similar in general character to the marl referred to above, but richer in phosphates.

ANALYSES.	3685.	3686.
Potash .....	.49	.52
Soda .....	.62	.65
Lime	14.39	19.09
Magnesia .....	.52	.36
Oxide of iron and alumina	5.17	3.61
Sand and silica	60.57	54.26
Carbonic acid	5.20	4.30
Phosphoric acid	5.93	8.99
Sulphuric acid	1.99	2.07
Water	5.12	6.15
	<hr/> 100.00	<hr/> 100.00

OYSTER SHELL LIME.

3415. Made by H. A. Stevens, 39 South Front street, New Haven. 600 bushels make a car load, 42-45 pounds per bushel. Cost 12 cents per bushel. The ton, of 46 bushels, costs \$5.52.

ANALYSIS.	
Insoluble matters .....	.93
Water (free and combined)	23.17
Carbonic acid	3.85
Lime	69.55
Magnesia .....	.76
Oxide of iron and alumina .....	.58
Phosphoric acid	trace
Sulphuric acid .....	.72
Undetermined and loss .....	.44
	<hr/> 100.00

This material has been quite extensively used the last year by tobacco growers and others.

A SOAP FACTORY REFUSE.

3697. Regarding this, J. M. Hubbard, of Middletown, writes: "It is produced by Allison Brothers, soap manufacturers. It consists of tankage from their works, mixed with dry ashes to facilitate handling. They make from one to two tons per week, hardly enough to pay for drying and thorough manipulation."

ANALYSIS.	
Nitrogen .....	.84
Soluble phosphoric acid	trace
Reverted phosphoric acid	1.56
Insoluble phosphoric acid	4.12
Potash	1.23
Moisture	28.76

Calculated by the same schedule as commercial fertilizers, its valuation per ton would be \$7.87, but owing to its wetness and unfavorable mechanical condition, this valuation is quite too high.

SILK WORM WASTE.

3523. A sample of this material from Cheney Brothers, of South Manchester, contained 8.92 per cent. of nitrogen, .48 of phosphoric acid and .40 of potash.

HORN WASTE.

3682. A sample, consisting apparently of very thin horn turnings, contained 14.43 per cent. of nitrogen and not more than traces of either potash or phosphoric acid.

WOOL WASTE.

3683. A sample of waste from "carbonizing" burry wool and camel's hair, from a woolen mill in Naugatuck, sent by M. S. Baldwin. The carbonizing liquor contained oil of vitriol, salt and chloride of aluminum.

The material contains neither phosphoric acid or potash, but 5.50 per cent. of nitrogen. This nitrogen is no doubt almost wholly from the wool, and is only very slowly available.

3721. "Refuse waste and dust from a shoddy mill," sent by Thomas Barrett, Scitico, contains 3.78 per cent. nitrogen.

TOBACCO DUST.

3485. Used as an insecticide and fertilizer. Made by H. F. Stoothoff, New York City. Sampled from stock of Olds & Whipple, Hartford, by Station agent.

The sample contained 1.76 per cent. of nitrogen, .52 of phosphoric acid, and 1.76 per cent. of potash.

MUCK.

3702, light brown in color, **3703** dark brown, sent by Ira F. Dudley, North Guilford. **3722.** Sent by Ezekiel Reynolds, Stanwich.

ANALYSES.

	3702.		3703.		3722.	
	As received.	Water- free.	As received.	Water- free.	As received.	Water- free.
Water.....	71.12	---	71.90	---	72.26	---
*Vegetable matter.....	7.79	26.95	23.45	83.39	19.03	68.57
Oxide of iron and alumina..	1.46	5.07	.98	3.47	---	---
Lime.....	.24	.84	.92	3.25	---	---
Magnesia.....	.24	.83	trace	trace	---	---
Potash.....	.06	.21	.03	.11	.04	.14
Soda.....	.03	.10	.04	.15	---	---
Sulphuric acid.....	.15	.52	.20	.79	---	---
Phosphoric acid.....	trace	trace	trace	trace	.06	.20
Sand and silica.....	18.91	65.48	2.48	8.84	5.62	---
	<hr/> 100.00	<hr/> 100.00	<hr/> 100.00	<hr/> 100.00		
*Containing nitrogen.....	.25	.86	.35	1.23	.43	1.54

REVIEW OF THE FERTILIZER MARKET.

FOR THE TWELVE MONTHS ENDING DECEMBER 31, 1892.

NITROGEN.

Nitric Nitrogen.

The *wholesale* New York quotation of nitrogen in nitrate of soda, which was 13.3 cents per pound in December, 1891, opened in January, 1892 at 12.9 and fell gradually, being quoted in May at 10.5 cents. It then rose to 11.1 in July, and since then has risen steadily and rapidly, being 13.7 cents in November and December. This sharp rise is due to the scarcity of nitrate of soda in this country, owing to a limitation of the output by the Chilean manufacturers.

The average *wholesale* quotation for 1892 has been 12.1 cents per pound. The corresponding figures for 1891 and 1890 respectively, were 12.9 and 11.5 cents.

The *retail* ton price of nitrogen in nitrate of soda in this State during the last season has been from 14 to 15½ cents per pound.

Ammonic Nitrogen.

The *wholesale* price in New York of nitrogen in sulphate of ammonia has been quite uniform. The average monthly quotation was 14.7 cents from January till September. It fell to 14.0 cents in October, and has remained at that figure ever since.

The average *wholesale* quotation for the twelve months has been 14.5 cents per pound. The average for the years 1891 and 1890 has been 15.6 cents and 16 cents respectively.

The *retail* price of nitrogen in sulphate of ammonia in Connecticut has been not far from 17½ cents per pound for the whole season.

Organic Nitrogen.

The *wholesale* quotation of nitrogen in high grade Red Blood, which was 12.2 cents per pound in January, fell to 11.5 in March, and since then has risen steadily and in the last months of the year rapidly, being 13 cents in October, 14.1 cents in November, and 14.6 cents in December.

The quotations of nitrogen in black blood, are as a rule, from three-tenths to five-tenths of a cent per pound less.

The average quotation for the whole year has been 12.4 cents per pound for nitrogen in red blood and 12.0 cents in black blood. In 1891 these average figures were 12.3 and 11.7. In 1890 they were 11.8 and 11.3 cents.

Dried blood is seldom met with in the Connecticut retail market.

Nitrogen in Azotin was quoted in January and February last at 11.5 cents *wholesale*, from then till September at 11.2, and since then has risen rapidly to 12.6 in October, 13.7 in November, and 14.8 in December. Its average quotation for the year has been 11.9 cents against 11.5 cents in 1891.

Dried Fish Scrap, which is considerably used in mixed fertilizers which was quoted in the earlier months of the year at \$23.75 per ton, *wholesale*, rose in October to \$24.50, in November to \$24.90, and in December to \$26.00. The catch of fish this year is said to have been extremely small.

Acidulated Fish Scrap has fluctuated from \$12.07 to \$15.00, at which latter figure it was quoted in December.

Most of the organic nitrogen sold at *retail* in this State, in un-mixed goods, has been in the form of bone and tankage, or in cotton seed meal and castor pomace. As has been shown on page 66 the nitrogen of cotton seed meal has cost at *retail* in this State during the last year from 14.1 cents to 16.3 cents per pound; in castor pomace from 14.7 to 18.12 cents.

PHOSPHATIC MATERIALS.

Refuse Bone Black was quoted at about \$18.50 per ton till September, when it began to rise, and was quoted in December at \$19.50 per ton.

Rough Bone has fallen during the year from \$21.50 to \$19.50, and *Ground Bone* also, from \$23.25 to \$22.25.

Ground Charleston Rock, quoted in January and February at \$9.25; has since then been quoted at \$8.75.

Acid Phosphate, 14 per cent. available phosphoric acid, was quoted at 73½c. per unit till August, and since then at 66c. per unit, which is equivalent to 3.7 cents and 3.3 cents per pound for available phosphoric acid at *wholesale*.

The *retail* price in Connecticut of available phosphoric acid in dissolved bone black, as seen on page 68, has been from 5.7 cents to 8.3 cents per pound. Acid phosphate made from Charleston rock, though much cheaper, does not come into our retail market.

POTASH.

Muriate of Potash.

The *wholesale* price of actual potash in this form has advanced during the year from 3.62 cents to 3.78 cents per pound.

It has *retailed* in Connecticut during the year for from 3.9 to 4.7 cents per pound. See page 69.

Double Sulphate of Potash and Magnesia.

The *wholesale* quotation of potash in this form has remained quite constant during the year at 4.77 cents per pound.

It has *retailed* in Connecticut at about 5.7 cents per pound. See page 68.

High Grade Sulphate of Potash.

The *wholesale* New York quotation of potash in this form has remained quite steady at 4.48 cents per pound.

The *retail* price in Connecticut has been from 5.36 to 5.7 cents per pound. See page 68.

Kainit.

The New York *wholesale* quotation has remained steady at \$9.00 per ton during the whole year, at which price the actual *wholesale* cost of the potash would be about 3.7 cents per pound.

The market quotations given above are taken from the "Oil Paint and Drug Reporter," published in New York. The weekly quotations for each month are averaged, and this average is taken as the quotation for the month.

The following explanations will help in the examination of the market quotations, and will also show the basis on which they have been interpreted in this review:

Phosphate rock, kainit, bone, fish-scrap, tankage and some other articles are quoted and sold by the ton. The seller usually has an analysis of his stock and purchasers often control this by an analysis at the time of purchase.

Sulphate of ammonia, nitrate of soda and muriate of potash are quoted and sold by the pound, and generally their *wholesale* and *retail* rates do not differ very widely.

Blood, azotin and ammonite are quoted at so much "per unit of ammonia." To reduce ammonia to nitrogen, multiply the per cent. of ammonia by the decimal .824 (or multiply the percentage of ammonia by 14 and divide that product by 17). A "unit of ammonia" is one per cent., or 20 pounds per ton. To illustrate: if a lot of tankage has 7.0 per cent. of nitrogen, equivalent to 8.5 per cent. of ammonia, it is said to contain $8\frac{1}{2}$ units of ammonia, and if quoted at \$2.25 per unit, a ton of it will cost $8\frac{1}{2} \times 2.25 = \19.13 .

The term "ammonia" is *properly* used only in those cases where the nitrogen actually exists in the form of ammonia, but it is a usage of the trade to reckon all nitrogen, in whatever form it occurs, as ammonia.

To facilitate finding the actual cost of nitrogen per pound from the cost per unit of ammonia in the market reports, the following table is given:

Ammonia at \$3.00 per unit is equivalent to nitrogen at 18.2 cts. per lb.

"	2.90	"	"	"	17.6	"
"	2.80	"	"	"	17.0	"
"	2.70	"	"	"	16.4	"
"	2.60	"	"	"	15.8	"
"	2.50	"	"	"	15.2	"
"	2.40	"	"	"	14.6	"
"	2.30	"	"	"	14.0	"
"	2.20	"	"	"	13.4	"
"	2.10	"	"	"	12.8	"
"	2.00	"	"	"	12.2	"
"	1.90	"	"	"	11.6	"
"	1.80	"	"	"	11.0	"

Commercial Sulphate of Ammonia contains on an average 20.5 per cent. of nitrogen, though it varies considerably in quality. With that per cent. of nitrogen (equivalent to 24.3 per cent. of ammonia),

At 4 cents per lb. Nitrogen costs 19.5 cents per lb.

"	$3\frac{7}{8}$	"	"	"	18.9	"
"	$3\frac{3}{4}$	"	"	"	18.3	"
"	$3\frac{5}{8}$	"	"	"	17.6	"
"	$3\frac{1}{2}$	"	"	"	17.0	"
"	$3\frac{3}{8}$	"	"	"	16.4	"
"	$3\frac{1}{4}$	"	"	"	15.8	"
"	$3\frac{1}{8}$	"	"	"	15.2	"
"	3	"	"	"	14.6	"
"	$2\frac{7}{8}$	"	"	"	14.0	"
"	$2\frac{3}{4}$	"	"	"	13.4	"

Commercial Nitrate of Soda averages 95 per cent. of pure salt or 16.0 per cent. of nitrogen.

If quoted at 3.0 cents per pound, Nitrogen costs 18.8 cents per lb.

"	2.9	"	"	"	18.2	"
"	2.8	"	"	"	17.5	"
"	2.7	"	"	"	16.9	"
"	2.6	"	"	"	16.2	"
"	2.5	"	"	"	15.6	"
"	2.4	"	"	"	15.0	"
"	2.3	"	"	"	14.4	"
"	2.2	"	"	"	13.8	"
"	2.1	"	"	"	13.2	"
"	2.0	"	"	"	12.5	"
"	1.9	"	"	"	11.9	"
"	1.8	"	"	"	11.3	"
"	1.7	"	"	"	10.6	"

Commercial Muriate of Potash and also High Grade, 98 per cent., Sulphate of Potash usually contain $50\frac{1}{2}$ per cent. of actual potash.

If quoted at 2.60 cents per lb. Actual Potash costs 5.15 cents per lb.

"	2.50	"	"	"	4.95	"
"	2.40	"	"	"	4.75	"
"	2.30	"	"	"	4.55	"
"	2.25	"	"	"	4.45	"
"	2.20	"	"	"	4.35	"
"	2.15	"	"	"	4.25	"
"	2.10	"	"	"	4.15	"
"	2.05	"	"	"	4.06	"
"	2.00	"	"	"	3.96	"
"	1.95	"	"	"	3.86	"
"	1.90	"	"	"	3.76	"
"	1.85	"	"	"	3.66	"
"	1.80	"	"	"	3.56	"
"	1.75	"	"	"	3.46	"
"	1.70	"	"	"	3.36	"

The Double Sulphate of Potash and Magnesia has about $26\frac{1}{2}$ per cent. of actual potash.

If quoted at 1.00 cent per lb. Actual Potash costs 3.77 cents per lb.

"	1.05	"	"	"	3.96	"
"	1.10	"	"	"	4.15	"
"	1.15	"	"	"	4.34	"
"	1.20	"	"	"	4.53	"

The following table shows the fluctuations in the wholesale prices of a number of fertilizing materials in the New York market, since January, 1890. The price given for each month is the average of the four weekly quotations of that month. Sulphate of ammonia is assumed to contain 20.5 per cent. and nitrate of soda 16.0 per cent. nitrogen, and muriate of potash 50½ per cent. of actual potash or 80 per cent. of the pure salt.

WHOLESALE PRICES OF FERTILIZING MATERIALS.

		Dried Blood.		Cost of Nitrogen at wholesale in			Cost of Potash at wholesale in			
		Red. Cents per pound.	Black or low grade. Cents per pound.	Azotin or Ammonite. Cents per pound.	Nitrate of Soda. Cents per pound.	Sulphate of Ammonia. Cents per pound.	Muriate of Potash. Cents per pound.	Double Manure Salt. Cents per pound.	High Grade Sulphate of Potash. Cents per pound.	Available Phosphoric Acid in Dissolved South Carolina Rock. Cents per pound.
1890.	January	12.4	11.9	12.7	12.1	15.4	3.64	4.44	4.97	4.06
	February	12.4	11.8	12.5	12.0	15.4	3.64	4.44	4.97	4.06
	March	12.1	11.8	12.2	11.9	15.4	3.64	4.44	4.89	4.06
	April	12.0	11.7	12.2	11.2	15.4	3.64	4.42	4.77	4.06
	May	11.9	11.3	12.2	11.2	15.3	3.62	4.42	4.77	4.05
	June	11.9	11.4	12.1	11.2	15.8	3.62	4.42	4.77	4.00
	July	11.9	11.4	12.0	11.2	16.6	3.62	4.42	4.77	3.69
	August	11.6	11.0	11.5	11.0	16.6	3.62	4.42	4.77	3.69
	September	11.3	10.7	11.3	11.1	16.6	3.62	4.42	4.77	3.69
	October	11.4	10.8	11.7	11.6	16.5	3.62	4.42	4.17	3.69
	November	11.5	10.9	11.4	11.6	16.5	3.55	4.27	4.06	3.69
	December	11.5	10.9	11.4	11.6	16.5	3.62	4.53	4.31	3.69
1891.	January	11.0	10.5	11.5	10.9	16.5	3.58	4.53	4.33	3.69
	February	12.0	11.0	11.5	12.5	16.5	3.58	4.53	4.33	3.69
	March	12.5	11.9	11.5	14.3	16.5	3.68	4.53	4.33	3.69
	April	12.4	12.0	11.5	14.4	16.5	3.68	4.53	4.33	3.69
	May	12.3	11.7	11.5	13.6	16.0	3.68	4.53	4.33	3.69
	June	12.3	11.7	11.5	13.2	15.5	3.68	4.53	4.33	3.69
	July	12.2	11.6	11.5	12.2	15.4	3.68	4.53	4.33	3.69
	August	12.3	11.8	11.5	11.3	15.4	3.68	4.53	4.33	3.69
	September	12.3	12.0	11.5	12.2	14.8	3.68	4.53	4.33	3.69
	October	12.3	12.0	11.5	13.6	14.7	3.68	4.53	4.33	3.69
	November	12.6	12.3	11.5	13.5	14.7	3.68	4.53	4.23	3.69
	December	12.4	12.1	11.5	13.3	14.7	3.63	4.63	4.41	3.69
1892.	January	12.2	11.5	11.5	12.9	14.7	3.62	4.79	4.45	3.69
	February	11.6	11.3	11.5	12.0	14.7	3.64	4.77	4.48	3.69
	March	11.5	11.0	11.2	12.1	14.7	3.71	4.77	4.48	3.69
	April	11.8	11.3	11.2	11.0	14.7	3.78	4.77	4.48	3.69
	May	12.0	11.5	11.2	10.5	14.7	3.78	4.77	4.48	3.69
	June	11.7	11.2	11.2	10.6	14.7	3.78	4.77	4.48	3.69
	July	12.1	11.7	11.2	11.1	14.7	3.78	4.77	4.48	3.69
	August	12.3	12.1	11.2	11.7	14.7	3.78	4.77	4.48	3.60
	September	12.4	12.0	12.0	12.4	14.2	3.78	4.77	4.48	3.30
	October	13.0	12.6	12.6	12.9	14.0	3.78	4.77	4.48	3.30
	November	14.1	13.8	13.7	13.7	14.0	3.78	4.77	4.48	3.30
	December	14.6	14.2	14.8	13.7	14.0	3.78	4.77	4.48	3.30

THE BEHAVIOR OF NITROGEN IN THE SOIL.

The following correspondence answers questions which are frequently addressed to the Station, and is therefore of general interest.

A Connecticut farmer writes:—

"I would like you to tell me about how much of the nitrogen a crop of potatoes would get from a fertilizer that contained four per cent., and what would become of what the crop did not use. I would like to ask the same about nitrate of soda, sulphate of ammonia, dried blood and tankage, it being understood that these articles were sown in the drill at the planting time.

In the second place, if ground plaster is mixed with these goods, would the potatoes get any more of the nitrogen than without?

How long after nitrogen in the above forms is put in the ground does it take to so change it that the plant cannot get it, if not used before the change takes place?"

Reply was made as follows:

Your questions cannot be answered very satisfactorily. Under favorable circumstances, most of the nitrogen of quick-acting fertilizers, used in the moderate quantities commonly employed, is taken up by the crops. In drought, the crop does not grow and the fertilizer remains unchanged in the soil. In warm and wet weather some nitrogen leaches out of the soil, and more or less according to the quantity of water which runs off in the drainage, and according to the kind of fertilizer.

In soils where there is free access of air for a good depth, the nitrogen of ammonia and of animal matters, like blood and tankage and of urine, passes more or less rapidly into nitric acid, provided there be present carbonate of lime or other alkaline body to form a nitrate, and provided also there be moderate moisture and a summer temperature. The nitrates thus formed, if not taken up by plants, are freely washed out of the soil by drainage water.

On the other hand, when stable-manure or leaf-mold or grass-roots slowly decay in a wet soil where access of air is imperfect and the temperature low, nitrogen of these and of nitrates, ammonia-salts, blood, etc., passes into a comparatively inactive form like that of swamp-muck. Virgin soil from forest or prairie contains most of its nitrogen in the latter form, which under cultivation (tillage, etc.), is slowly changed into nitrates.

Land long left to grass and natural herbage or in wood, becomes richer in nitrogen; that under tillage, poorer. In the soil of forests there is said to be no nitrates. From drained lands, under tillage, there is considerable annual loss of nitrates, and drained lands in pasture and meadow also lose nitrogen as nitrates, although there is accumulation of nitrogen at the surface in the *humus* (decayed vegetable matter).

What is thus far written is the result of all the trustworthy investigations yet made known, but there is doubtless much more to be learned on these subjects than is now understood.

As to your question—would potatoes get more nitrogen from fertilizers if plaster were mixed with them, it may be said that so far as known, plaster would have no influence in case of nitrate of soda or sulphate of ammonia. When tankage, blood or urine begin to change in the soil under the moist warmth of spring time, they at first yield carbonate of ammonia—the same as one may smell in the air of a warm horse stable. The process of nitrification is checked by too much alkali. Plaster and carbonate of ammonia in the presence of water become carbonate of lime and sulphate of ammonia, neither of which oppose nitrification. It may be that this effect is favorable in the soil, especially when the fertilizer is sown in the hill or drill and not thoroughly mixed with earth, but water enough to *wet* the soil would be essential to the result.

OBSERVATIONS ON THE GROWTH OF MAIZE CONTINUOUSLY ON THE SAME LAND.

In the years 1888 and 1889 a parcel of land containing $1\frac{1}{2}$ acres was dressed with commercial fertilizers and planted to corn. The fertilizers and crops were analyzed, and the exhaustion or enrichment of the soil by the dressing and cropping accurately determined.

In 1890 this land was divided into four strips, each containing three tenths of an acre, and dressed as shown in the accompanying diagram. Corn was planted in drills which were four feet apart, and the stalks stood ten inches apart in the drill. The crop from each plot was separately weighed and analyzed. The same thing was repeated in 1891 and the results with full particulars of the method of planting, cultivating and harvesting are given in the Report of this station for 1891, pages 139, 149.

The same work has been repeated this year, 1892, with the same variety of seed, and under like conditions of planting, cultivating and harvesting as far as it was possible.

It is not necessary to rehearse these particulars, as they have been fully described in the Report already referred to.

The land was plowed May 5, 1892, planted May 24, the crop was cultivated June 11, July 2, and again late in July. It was cut Sept. 19, husked, weighed and harvested Oct. 25.

South.	Plot A.—Cow Manure at the rate of 10 cords per acre.	North.
	Plot B.—Hog Manure at the rate of $13\frac{1}{2}$ cords per acre.	
	Plot C.—Fertilizer Chemicals at the rate of 1700 pounds per acre.	
	Plot D.—No manure or fertilizer of any kind.	

Table I presents the gross weight of field cured kernels, cobs and stover on the several plots.

Inasmuch as the kernels were air-dried on the cob, the weight of the latter in the field-cured condition could not be ascertained. The weight therefore of the kernels in the table is slightly higher and that of the cobs correspondingly lower than it should be. But the error is insignificant.

TABLE I.—GROSS YIELD OF THE PLOTS IN POUNDS PER ACRE.

	Plot A Cow manure.	Plot B Hog manure.	Plot C Chemicals.	Plot D No fertilizer.
Kernels	4858.7	5637.8	4864.4	2230.1
Cobs	515.8	688.0	714.7	237.4
Stover	5545.5	6274.2	4291.2	2662.5
	10920.0	12600.0	9870.3	3130.0

DRY SUBSTANCE OF THE CROPS IN POUNDS PER ACRE.

A strict comparison of yields can only be made on the water-free substance, since the field-cured crops contain large and variable quantities of water. Such a comparison is given below in Table II.

TABLE II.—DRY MATTER OF THE CROPS, POUNDS PER ACRE.

	In kernels.	In cobs.	In stover.	Total.
Plot A, cow manure	3018.3	460.7	3701.6	7180.6
Plot B, hog manure	3501.7	614.4	4116.5	8232.6
Plot C, fertilizer chemicals	3564.6	638.2	2858.7	7061.5
Plot D, no fertilizer	1592.3	212.0	1704.9	3509.2

YIELD OF EACH FOOD INGREDIENT, IN POUNDS PER ACRE.

From Table IV, given further on, and from the gross weights of the crops, has been calculated Table III, which shows how many pounds of each food ingredient were harvested in the kernels, the cobs and the stover separately, and how much in all together.

The cobs were not analyzed, but as their total weight was comparatively small, and as their composition is not likely to vary widely, the average composition of cobs, as determined in other analyses, was applied for the calculation.

DIFFERENCES IN CHEMICAL COMPOSITION OF CROP CAUSED BY DIFFERENCES IN FERTILIZATION.

Table IV gives the analyses of kernels and stover from the four plots, both in the field-cured and water-free condition. The latter serves best for comparison.

TABLE III.—YIELD OF EACH FOOD INGREDIENT IN POUNDS PER ACRE.

	Plot A.				Plot B.				Plot C.				Plot D.			
	Kernels.	Cob.	Stover.	Total.	Kernels.	Cob.	Stover.	Total.	Kernels.	Cob.	Stover.	Total.	Kernels.	Cob.	Stover.	Total.
Water -----	1840.4	55.1	1843.9	3739.4	2136.1	73.6	2157.7	4367.4	1299.8	76.5	1432.4	2808.7	637.8	25.4	957.6	1620.8
Ash -----	46.1	7.2	237.3	290.6	54.7	9.6	267.3	331.6	49.1	10.0	170.7	229.8	20.5	3.3	90.8	114.6
Albuminoids -----	352.2	12.4	222.4	587.0	421.7	16.5	284.2	722.4	394.5	17.1	176.8	588.4	155.7	5.7	110.5	271.9
Fiber -----	46.6	155.3	1206.1	1408.0	54.1	207.1	1329.5	1590.7	61.8	215.1	953.9	1230.8	28.3	71.5	559.1	658.9
Nitrogen-free extract ..	2409.2	283.2	1978.1	4670.5	2779.4	377.8	2175.3	5332.5	2873.4	392.4	1516.1	4781.9	1309.3	130.3	918.5	2358.1
Fat -----	164.2	2.6	57.7	224.5	191.8	3.4	60.2	255.4	185.8	3.6	41.2	230.6	78.5	1.2	26.0	105.7
	4858.7	515.8	5545.5	10920.0	5637.8	688.0	6274.2	12600.0	4864.4	714.7	4291.1	9870.2	2230.1	237.4	2682.5	5130.0

TABLE IV.—ANALYSES OF FIELD-CURED MAIZE KERNELS AND STOVER FROM PLOTS A, B, C, D.

PLOT.	ANALYSIS OF FIELD-CURED MAIZE.						ANALYSIS, CALCULATED WATER-FREE.				
	Water.	Ash.	Albumin-oids.	Fiber.	Nitrogen-Free Extract. (Starch, Gum, etc.)	Fat.	Ash.	Albumin-oids.	Fiber.	Nitrogen-Free Extract. (Starch, Gum, etc.)	Fat.
KERNELS.											
A.	37.87	.95	7.25	.96	49.59	3.38	1.53	11.67	1.54	79.83	5.43
B.	37.89	.97	7.48	.96	49.30	3.40	1.56	12.04	1.55	79.38	5.47
C.	26.72	1.01	8.11	1.27	59.07	3.82	1.37	11.05	1.74	80.62	5.22
D.	28.60	.92	6.98	1.27	58.71	3.52	1.29	9.80	1.78	82.21	4.92
STOVER.											
A.	33.25	4.28	4.01	21.75	35.67	1.04	6.40	6.00	32.60	53.45	1.55
B.	34.39	4.26	4.53	21.19	34.67	.96	6.50	6.93	32.28	52.82	1.47
C.	33.38	3.98	4.12	22.23	35.33	.96	5.97	6.18	33.36	53.05	1.44
D.	35.97	3.41	4.15	20.99	34.50	.98	5.32	6.48	32.77	53.90	1.53

QUANTITIES OF NITROGEN, PHOSPHORIC ACID AND POTASH
APPLIED IN THE MANURE OR FERTILIZER AND
REMOVED BY THE CROP.

The manure used, which was made from the same kind of feed and of animals as in 1890, was not analyzed again in 1891 or 1892, but was assumed to have the same composition as in the previous year.

In Table V are given, first, the total quantities of nitrogen, phosphoric acid and potash which have been applied to the land in the years 1888, 1889, 1890 and 1891, in excess of the quantities removed by the crops of those years, then second, the quantities applied in 1892, third, the quantities removed by the maize crop of 1892, and fourth, the quantities of these ingredients added in five years in excess of what was removed by the five crops, marked [+], or the quantities of each removed by the crops in excess of what was supplied in fertilizers, marked [-].

The larger quantity of phosphoric acid and smaller quantity of potash in excess on Plot B as compared with A is explained by differences in the feed of the cattle which made the manure used. The cows ate large quantities of hay and stover, relatively rich in potash while the hogs had phosphates in the bones which came in garbage, but potash in the food was relatively small in quantity.

So heavy an application as $13\frac{1}{2}$ cords per acre of this hog manure while supplying nitrogen and phosphoric acid in very great excess of the quantity which the crop removes, supplied this year less potash than the corn crop removed.

YIELDS OF "SHELLED CORN," AND PERCENTAGE COMPOSITION
OF DRY MATTER FOR FIVE YEARS.

Table VI shows the largest crops of dry matter, reckoned to the acre, which were harvested in 1888 and 1889 and their percentage composition, together with all crops from drills in 1890 and from Plots A, B, C, D in 1891 and 1892 calculated to an acre. The rows were four feet apart in all four years.

The plots marked A were on cow manure, B were on hog manure, C on commercial fertilizers, and D had no fertilizer in the years 1890, 1891 and 1892.

TABLE V.—ENRICHMENT OR IMPOVERISHMENT OF SOIL BY FIVE YEARS' MANURING AND CROPPING.

	Cow Manure. Plot A.			Hog Manure. Plot B.			Fertilizer Chemicals. Plot C.			No Fertilizer. Plot D.		
	Nitrogen.	Phos. acid.	Potash.	Nitrogen.	Phos. acid.	Potash.	Nitrogen.	Phos. acid.	Potash.	Nitrogen.	Phos. acid.	Potash.
After four years' cropping—	+ 302.1	+ 340.2	+ 330.5	+ 550.7	+ 1219.9	+ 72.3	+ 106.2	+ 403.8	+ 92.2	— 183.6	+ 97.1	— 10.8
Applied in 1892.....	286.3	136.4	204.5	419.9	586.5	72.4	172.0	162.0	69.0	00.0	00.0	00.0
Taken off in Crop of 1892..	93.9	29.6	94.6	115.6	40.0	101.3	94.1	29.1	65.3	43.5	14.6	18.5
Leaving in excess (+) or deficiency (—) after five years' cropping.....	+ 494.5	+ 447.0	+ 440.4	+ 855.0	+ 1766.4	+ 43.4	+ 184.1	+ 536.7	+ 95.9	— 227.1	+ 82.5	— 29.3

As it is customary to judge of a maize crop by the yield of "shelled corn" in bushels, the yields have also been calculated in this way with the results given in the fourth column of the table. In this calculation twenty per cent. has been added to the weight of water-free kernels for the water in corn cured enough to shell and 50 pounds have been assumed as the weight of such shelled corn per bushel.

Further discussion of the results here tabulated is reserved till more data are gathered as each year's cropping adds to their interest and value.

ANALYSES OF CREAMERY AND PRIVATE DAIRY BUTTER.

The samples whose analyses are given below were taken from the Exhibit made at the meeting of the Connecticut Dairymen's Association, at Hartford, Jan. 19, 1892.

They represent all the butter which was there exhibited.

The samples were scored by the judges on the following scale :

Perfection requires, Flavor.....	50 points.
Grain.....	25
Color.....	15
Salt.....	5
Package or appearance..	5
	100

The scores and chemical analyses are given on page 131.

A sample of Ayrshire butter not entered in competition, had the following composition :

Water	9.12
Salt	3.52
Curd.....	1.30
Fat.....	86.06
	100.00

From these analyses, with those given in the Report for 1891, numbering 17 in all, is calculated the average composition of creamery butter. From the 22 analyses of Private Dairy butter is also calculated its average composition as follows :

CREAMERY BUTTER.			PRIVATE DAIRY BUTTER.		
	Average.	Range of Composition.		Average.	Range of Composition.
Water	10.08	6.5—12.8		10.87	8.2—15.2
Salt	3.17	2.1— 4.8		3.39	.7— 2.5
Curd.....	1.14	.9— 1.6		1.29	1.2— 7.8
Fat.....	85.61	82.0—88.4		84.45	80.7—87.7
	100.00			100.00	

PROTEIDS OF THE FLAXSEED.

Abstract of a Paper published in the American Chemical Journal, vol. 14, pp. 629-661.

By THOMAS B. OSBORNE.

The extensive use, as a cattle-food, of flaxseed partly freed from oil by expression or extraction, under the name of linseed-meal, renders desirable as complete a knowledge as possible of its chemical composition. As the chief value of this feed is due to the large amount of albuminoids contained in it, a careful study of these bodies is important from a practical as well as from a scientific standpoint.

Although extended search has been made, the writer has nowhere found any investigation relating to the proteids contained in this seed. A study of these proteids was accordingly undertaken, the results of which are here briefly stated.

Ground flaxseed, freed from oil by extraction with benzine or ether, yields to both water and solutions of sodium chloride, a large proportion of its proteid matter. After complete exhaustion with water, 10-per cent. sodium chloride brine extracts a further portion of proteids. Neither water nor salt solution removes all the proteids, for there always remains in the extracted residue more or less proteid soluble in dilute potash-water, as well as some nitrogenous substance, probably proteid, which the alkali fails to remove.

Flax Globulin.—Of the substance soluble in water or sodium chloride solution as well as of that taken up directly by dilute potash-solution, a very large part is a globulin which has been separated in a crystalline form and prepared, it is believed, in a state of purity.

The composition of this globulin is shown by the following analyses of ten distinct preparations obtained under different conditions.

FLAX GLOBULIN.

Extracted by water at 20°.

	1	2	3
Carbon	51.42	----	51.69
Hydrogen	7.06	----	----
Nitrogen	18.61	18.74	18.70
Sulphur	0.76	----	0.73
Oxygen	22.15	----	----
	<hr/> 100.00		

Extracted by salt solution.

	After water at 20°.	After water at 40°.	Direct.	Direct.
	4	5	6	7
Carbon	51.17	51.46	51.32	51.59
Hydrogen	6.90	6.94	6.87	7.27
Nitrogen	18.95	18.41	18.60	18.34
Sulphur	0.88	0.99	0.82	} 22.80
Oxygen	22.10	22.29	22.39	
	100.00	100.00	100.00	100.00

Extracted by $\frac{2}{10}$ per cent. potash solution.

	Prep. 6 dissolved in potash and precipitated.			Average.
	8	9	10	1-10
Carbon	51.67	51.53	51.50	51.48
Hydrogen	6.92	6.94	6.95	6.94
Nitrogen	18.79	18.45	18.37	18.60
Sulphur	0.82	0.73	} 23.18	0.81
Oxygen	21.80	22.35		22.17
	100.00	100.00	100.00	100.00

These results agree so closely with the analyses of the globulin obtained from squash-seed, that there can be no doubt that the two proteids are identical. This agreement is shown by the following figures:

	Flax Globulin.	Squash-seed Globulin.		
	Osborne.	Chittenden and Hartwell.*	Ritthausen.†	Grübler.‡
Carbon	51.48	51.60	51.61	51.48
Hydrogen	6.94	6.97	7.00	6.76
Nitrogen	18.60	18.80	----	18.14
Sulphur	0.81	1.01	----	0.96
Oxygen	22.17	21.62	----	22.66
	100.00	100.00		100.00

In pure distilled water at 20° this proteid, whether separated from solution by cooling or by dialysis, is wholly insoluble, while in water at 40° it is very slightly soluble. In 10 per cent. sodium chloride solution it is mostly soluble, a part (Weyl's "albuminate") generally remaining undissolved, which, however, dissolves readily on warming the solution and partly separates, on cooling, in very finely developed crystals. In glycerin diluted with water the substance separated by dialysis is wholly insoluble, either at 20° or 40°; while the substance separated from a warm sodium chloride solution is largely soluble at 20°.

* J. Physiol. 11, 440. † J. prakt. Chem. 25, 136. ‡ J. prakt. Chem. 44, 369.

It dissolves easily in $\frac{2}{10}$ per cent. potash solution and is thrown down by exact neutralization, without change of composition or properties.

This Globulin, when separated by dialysis, dissolves in 10 per cent. sodium chloride brine to a solution which on heating gives successively three minute coagula of other globulins at 67°, 80° and 88° respectively.

Saturation with sodium chloride gives a small precipitate which consists partly of these other globulins, for the filtrate from this precipitate, when diluted so as to contain 10-per cent. of sodium chloride, yields but a trace of coagulum on heating to boiling, while the precipitate itself dissolved in 10-per cent. sodium chloride yields a solution which coagulates at the various temperatures observed in the solution before saturation.

Saturation with ammonium sulphate and also with magnesium sulphate completely precipitates this proteid from its solutions.

Flax Albumin.—After separating the globulin by dialysis and filtration, the clear liquid can be heated to boiling without producing a coagulum, but if concentrated to a small volume a coagulation gradually takes place. If the dialysed liquid be treated with about 2 per cent. of sodium chloride, and a little hydrochloric acid be added, a precipitate is produced consisting of a proteid resembling an albumin in its solubility in water but like a globulin in that, when precipitated by salt and acid, it forms an acid compound soluble in water nearly or wholly free from salts. On the other hand it is thrown out of such solutions upon neutralization with sodium carbonate.

FLAX-ALBUMIN.

Carbon	50.14
Hydrogen	6.72
Nitrogen	17.54
Sulphur }	25.70
Oxygen }	
	<hr/> 100.00

Similar substances to the foregoing were found in the extracts of the maize kernel and in Chittenden and Osborne's paper* on the proteids of that seed, were described as albumins.

Flax Proteose.—Together with this albumin there is precipitated more or less proteose, resembling closely in composition the deuterovitellose obtained by Chittenden and Hartwell from the crystallized proteid of the squash-seed.† After separating

* Am. Chem. Jour., 13, 453, 529; 14, 20.

† J. Physiology, 11, 435.

the coagulable proteids by concentrating their solution to a small volume and filtering, there was always found in the filtrate more or less proteoses and peptones which were separated from solution by precipitation with alcohol.

The mixture of these substances was very readily soluble in water to a solution which, when saturated with ammonium sulphate while hot, and filtered, gave a strong red biuret-reaction, and no precipitate with copper sulphate, thus showing the presence of peptones. This was observed in all of the five preparations examined. The aqueous solution was precipitated by copper sulphate, gave a precipitate with nitric acid which dissolved on heating and reappeared on cooling, and a precipitate with ammonium sulphate. These reactions show the presence of proteoses.

The composition of the proteose and that of the deuterovitellose, obtained by Chittenden and Hartwell, by artificial digestion of the squash-seed globulin with pepsin, are as follows:

	FLAXSEED PROTEOSE.	SQUASH VITELLOSE.	
Carbon	49.98	50.42	49.27
Hydrogen	6.95	6.74	6.70
Nitrogen	18.78	18.43	18.78
Sulphur }	24.29	24.41	25.25
Oxygen }			
	100.00	100.00	100.00

The composition of the peptone and that of a small amount of proteid extracted by potash-water after exhausting flax-meal with sodium chloride solution, could not be determined.

THE AMOUNT OF THE VARIOUS PROTEIDS SEPARATED FROM THE FLAXSEED.

The results of this investigation, thus far recorded, show that the extracts of the flaxseed contain a globulin precipitable by dialysis; a proteid, resembling both globulin and albumin, precipitable by long continued heating at 100°, as well as by sodium chloride in the presence of acid; proteose and peptone-like bodies, and a proteid not extracted by sodium chloride solution, but soluble in dilute potash-water.

All attempts to determine the amounts of these various substances failed because of their change, while in solution, into non-proteid bodies. The relative amounts of the various proteids that

could be separated were very variable and it is almost certain that the more soluble forms were largely, if not wholly, derived from the globulin in consequence of its alteration during extraction and separation. These operations were in all cases greatly prolonged on account of the gum contained in the seed, which rendered filtration extremely difficult and slow. Putrefaction, however, was entirely prevented by the use of thymol. Numerous attempts were made to determine the total proteid-nitrogen in the seed, but in no case did the nitrogen extracted and recovered in the proteid precipitates, added to that in the extracted residue, equal the total nitrogen contained in the flaxseed meal.

This may be illustrated by the following figures: 100 grams of flaxseed meal, containing 8.40 per cent. of nitrogen, were extracted, first with water, then with 10-per cent. sodium chloride solution and, finally, with $\frac{2}{10}$ per cent. potash-water. Out of 8.4 grams of total nitrogen 0.4255 gram remained in the residue of the seed, showing that 94.94 per cent. of the total nitrogen was soluble in the reagents employed. The nitrogen extracted by potash-water amounted to 2.15 per cent. of the total, so that by water and by sodium chloride solution 92.79 per cent. of the total nitrogen was extracted. The nitrogen recovered from these solutions amounted to but 38.59 per cent. of the total, accordingly the nitrogen lost equaled 4.5528 grams, or 54.2 per cent. This loss must have been due either to the presence of non-proteid nitrogenous substances, or to a decomposition of the proteid matter into diffusible compounds.

A careful examination of the seed failed to detect any non-proteid nitrogenous compounds, but it was found that during dialysis of solutions of the proteids here described, nitrogenous substances continuously and slowly separated which gave none of the usual proteid reactions. In this way a very large proportion of the proteid nitrogen was lost.

When flaxseed meal was directly extracted with dilute potash-water, 32.74 per cent. of the meal was obtained in the form of a precipitated proteid, on neutralizing the solution. The insoluble residue of the meal further yielded nitrogen equivalent to 8.0 per cent. of proteid reckoned as globulin.* The nitrogen of the neutralization precipitate was equivalent to 29.4 per cent. of globulin. The sum of these would be 37.4 per cent. of the meal.

The results of this investigation, already given, show that the

* With 18.6 per cent. of nitrogen.

globulin and the body extracted by dilute potash are the only proteids found in the extract which are precipitated from an alkaline solution on neutralization. Therefore these two proteids must be the only ones contained in the precipitate. If we assume, that the proteids in the flax-seed have, on the average, 18 per cent. of nitrogen, the meal extracted in this case would contain 48.0 per cent. of proteids. The 37.4 per cent. thus accounted for amounts to 78.0 per cent. of the total proteids.

This would indicate that the globulin formed at least four-fifths of the proteid matter of the seed.

It is exceedingly desirable to determine as accurately as possible the amount of each proteid contained in the seed, and to know exactly its nitrogen content so that an accurate factor may be obtained for calculating the proportion of proteids from the nitrogen found.

It is evident from the preceding statements that it is impossible to say exactly what this factor should be for flax-seed, but a pretty close approximation can be made—one at least far more accurate than the factor at present in use based on a content of 16 per cent. of nitrogen. It has been shown that about 93 per cent. of the nitrogen of the seed is extracted by salt solutions. This nitrogen belongs chiefly to the globulin which contains 18.6 per cent. of nitrogen. The albumin-like body was found to contain 17.5 per cent. of nitrogen, and the proteose prepared in a pure state contained in one case 18.78 per cent. and in another 18.33 per cent. of nitrogen. If, then, we assume the proteids to contain collectively an average of 18.00 per cent. of nitrogen we will not be very far from the truth. The factor then for flax-seed would be 5.55 instead of 6.25, and, for a sample of linseed meal containing 7 per cent. of nitrogen, would give a content of proteid of 38.85 per cent. instead of 43.75—a difference of very considerable magnitude.

CRYSTALLIZED VEGETABLE PROTEIDS.

Abstract of a Paper published in the American Chemical Journal, vol. 14. pp. 662-689.

BY THOMAS B. OSBORNE.

The existence of crystallised proteids in seeds was pointed out by Hartig in 1855. Four years later, Maschke obtained hexagonal plates of proteid matter by extracting Brazil-nuts with water heated to 40°-50° and evaporating the filtered extract at 40°. Nägeli* investigated the crystal-like forms from the Brazil-nut as well as the artificially produced crystals of Maschke and concluded that they differed in some respects from true crystals. He therefore designated them as "crystalloids."

Sachsset† following Maschke's method, and also by precipitating the aqueous extract with carbonic acid, obtained several preparations of proteid from the Brazil-nut, which he analysed. These preparations were, however, not composed of distinct crystals, but of small discs.

Schmiedeberg‡ obtained crystallized products by treating the aqueous extract of the Brazil-nut with carbon dioxide, washing the precipitated proteid, digesting the precipitate with magnesia suspended in water at 35°, filtering and evaporating at the same temperature. These crystals he considered to be a compound of the proteid with magnesia.

Drechsel§ obtained crystals, presumably hexagonal plates, by submitting the solution containing the "magnesia compound," prepared as Schmiedeberg suggested, to dialysis in a vessel containing alcohol.

Drechsel afterwards obtained finely developed crystals by allowing a warm sodium chloride solution saturated with the proteid of the Brazil-nut to cool slowly.¶

At Drechsel's suggestion Grüber applied this method with some modification to the proteids of squash-seed, and made a large number of preparations of perfectly formed octahedral crystals whose properties and composition he described at length.¶

* Botanische Mittheilungen (München, 1863), vol. 1.

† Die Farbstoffe, Kohlenhydrate und Proteinsubstanzen (Leipzig, 1877), p. 315.

‡ Ztschr. physiol. Chem., 1, 205.

§ J. prakt. Chem., 19, 331.

¶ Grüber: *cf. ibid.*, 23, 100.

¶ J. prakt. Chem., 23, 97.

Ritthausen* obtained crystallised preparations from the castor-bean, hemp-seed, and sesame-seed, which separated from a warm sodium chloride solution on cooling in the form of regular octahedrons. The composition and properties of the crystals obtained from the hemp-seed and castor-bean he described in a subsequent paper.†

The writer next prepared rhombohedral and octahedral crystals from the oat-kernel by cooling a warm dilute sodium chloride solution saturated with the proteid.‡

The writer has also obtained octahedral crystals from flax-seed by extracting with a solution of sodium chloride and dialysing the filtered extract; the proteid separating in well-formed crystals as the salts were removed.||

The fact that these proteid substances can be artificially crystallised is not only interesting in itself, but is important as presumably furnishing a means for making preparations of undoubted purity which will afford a sure basis for further study of their properties. The contradictory statements made by the various investigators, not only in regard to properties and composition of these bodies but also in respect to the value of the methods of solution and separation which have been employed hitherto, render an exact knowledge of all the facts relating to these substances a matter of the highest scientific and practical importance.

An examination of the literature indicates that definitely crystallised preparations from the Brazil-nut have never been analyzed, and also shows that the published analyses do not agree sufficiently to fix the composition of the substance.

Ritthausen's observations on the properties of the crystallised proteids of the hemp-seed and castor-bean indicate that they are closely related to, if not identical with, the body obtained by Grüber from the squash-seed; yet the results of Ritthausen's analyses differ widely from those first made by Grüber.

The composition of the crystallised proteid of the squash-seed has been fixed within narrower limits by the analyses of Chittenden and Hartwell,§ Ritthausen,¶ and Grüber.** It seemed desirable, therefore, that the composition and properties of the

* J. prakt. Chem., **23**, 481.

† *Ibid.*, **25**, 130.

‡ Report Conn. Agri. Expt. Station 1890, and Am. Chem. J., **13**, 408; **14**, 212.

§ Am. Chem. J., **14**, 329, 629.

§ J. of Physiology, **11**, 435.

¶ J. prakt. Chem., **25**, 137.

** *Ibid.*, **44**, 369.

various crystallised proteids should be investigated anew in order to determine the relations of these substances.

As the writer has already prepared crystallised products from the oat-kernel and flax-seed, he determined to reinvestigate the similar bodies obtainable from the Brazil-nut, hemp-seed, castor-bean and squash-seed, and a summary of the results of this investigation are here given.

I. The crystallised globulins of the Brazil-nut and of the oat-kernel are distinct substances. Their composition is seen from the following analyses :

	Brazil-nut.	Oat-kernel.
Carbon	52.18	52.18
Hydrogen.....	6.92	7.05
Nitrogen.....	18.30	17.99
Sulphur.....	1.06	0.53
Oxygen.....	21.54	22.34
	<hr/> 100.00	<hr/> 100.00

If the differences in nitrogen- and sulphur-content are not perhaps sufficient to distinguish these two proteids, their reactions prove them to be distinct, for when prepared in the same manner they are unlike in many respects.

In distilled water heated to 60° the globulin of the Brazil-nut is wholly insoluble, while that of the oat-kernel dissolves completely. Saturation of a 10-per cent. sodium chloride solution of these substances with salt almost completely precipitates the proteid of the oat-kernel, that of the Brazil-nut being unaffected. Saturation of similar solutions with magnesium sulphate precipitates but little of the Brazil-nut, but all of the oat-globulin. When solutions of these bodies in 10-per cent. sodium chloride brine are heated, the Brazil-nut globulin begins to separate at 70°, a flocculent coagulum forming at 84°, which increases on raising the temperature to boiling, the proteid being largely, but not wholly, precipitated. The globulin of the oat-kernel, on the other hand, is not coagulated at all by boiling.

II. The crystalline globulins of the hemp-seed, castor-bean, squash-seed, and flax-seed are almost identical in composition, as may be seen by comparing the analyses:

	Hemp-seed.	Castor-Bean.	Squash-seed.	Flax-seed.
Carbon	51.28	51.31	51.66	51.48
Hydrogen	6.84	6.97	6.89	6.94
Nitrogen	18.84	18.75	18.51	18.60
Sulphur	0.87	0.76	0.88	0.81
Oxygen	22.17	22.21	22.06	22.17
	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>

The carbon content of the hemp and castor globulins is less than that of the squash and flax globulins by about 0.25 per cent., a difference too slight to have importance, if it were not constant for almost all the preparations analysed. The deportment of these globulins toward reagents is also very similar, but in this respect the hemp and castor globulins show slight differences from those of the squash and flax-seed; the two former are, however, almost exactly alike, and the two latter likewise closely agree together. The following table plainly exhibits these relations:

HEAT COAGULATIONS.

	Hemp.	Castor.	Squash.	Flax.
Turbidity	75°	87°	--	67°
Flocks	86	89	--	80
Filtered,				
Turbidity	88	87	87	90
Flocks	95	95	95	96
Filtered,				
Boiling	no coagulum.	ditto.	ditto.	ditto.
Filtered and acetic acid added,	heavy pp.	ditto.	ditto.	ditto.

SOLUBILITY.*

	Hemp.†		Castor.		Squash.	Flax.	
	A.	B.	A.	B.	A. B.	A.	B.
H ₂ O at 20°	P.	I.	P.	I.	I.	I.	I.
H ₂ O at 40°	S.	I.	S.	I.	I.	P.	I.
Glycerine at 20°	S.	I.	S.	I.	I.	P.	I.
Glycerine at 50°	S.	I.	S.	I.	I.	P.	I.
10-per cent. NaCl sol.							
diluted	Pp.	Pp.	Pp.	Pp.	Pp.	Pp.	Pp.
Saturated with NaCl ..	T. pp.	T. pp.	T. pp.	T. pp.	No Pp.	V.	V.
Saturated with MgSO ₄ ..	C. pp.	C. pp.	C. pp.	C. pp.	C. pp.	C. pp.	C. pp.

* P. = Partly soluble; I. = Insoluble; S. = Soluble; Pp. = Precipitate; T pp. = Trace of precipitate; C. pp. = Completely precipitated; V. = Very little precipitate.

† A. indicates preparations obtained by cooling warm salt solutions; B. those obtained by dialysis.

The proteids coagulating at the lower temperature are traces of other globulins imperfectly separated from the crystalline globulin. The coagulum separating at the higher temperature is undoubtedly a part of the crystalline globulin which is broken up when heated to this temperature. It is seen that the temperature at which this coagulum separates is the same for all four substances.

In solubility these four proteids are very nearly alike, the most noticeable difference being that the globulins of the hemp-seed and castor-bean, when separated from a warm sodium chloride solution, are soluble in water and diluted glycerin, while the other preparations, both of this substance and the globulins of other seeds, are insoluble under the same conditions.

Of the flax-seed globulin separated from a warm salt solution, a little dissolves in water at 40°.

The small precipitate obtained by saturating a sodium chloride solution of the globulins with salt, undoubtedly consists mostly of traces of other globulins.

It is at present impossible to assert that these four globulins are the same, but since differences exist between different preparations of globulin from the same seed as great as those found among the globulins of these different seeds, the writer is disposed to consider these four globulins as identical.

PROTEIDS OF THE WHEAT-KERNEL.

Abstract of a Paper nearly ready for publication.

By THOMAS B. OSBORNE AND CLARK L. VOORHEES.

The proteids contained in the wheat-kernel are :

I. A *Globulin* belonging to the class of vegetable vitellins, soluble in saline solutions, precipitated therefrom by dilution and also by saturation with magnesium sulphate or ammonium sulphate but not by saturation with sodium chloride. Partly precipitated by boiling, but not coagulated at temperatures below 100°. The wheat-kernel contains between 0.6 and 0.7 per cent. of this globulin. When dried at 110° its composition was found to be as follows :

WHEAT GLOBULIN.	
Carbon	51.03
Hydrogen	6.85
Nitrogen	18.39
Sulphur	0.69
Oxygen	23.04
	<hr/>
	100.00

II. An *Albumin*, coagulating at 52°, which differs from animal albumin in being precipitated on saturating its solutions with sodium chloride or with magnesium sulphate, but not precipitated on completely removing salts by dialysis in distilled water. It was found to form between 0.3 and 0.4 per cent. of the wheat-kernel and to have the following composition when separated from solution in the coagulated form by heating to 60° C.

WHEAT ALBUMIN.	
Carbon	53.02
Hydrogen	6.84
Nitrogen	16.80
Sulphur	1.28
Oxygen	22.06
	<hr/>
	100.00

III. A *Protease*, precipitated (after removing the globulin by dialysis, and the albumin by coagulation), by saturating the solution with sodium chloride or by adding 20 per cent. of sodium chloride and acidifying with acetic acid. This body was not analysed in its unaltered form. On concentrating its solutions

by boiling, a coagulum was gradually developed which formed about 0.3 per cent. of the wheat-kernel and had the following composition :

COAGULUM.		
Carbon.....	-----	51.86
Hydrogen	-----	6.82
Nitrogen	-----	17.32
Sulphur }	-----	24.00
Oxygen }	-----	
		100.00

The solution filtered from the substance just described, still contained a proteose-like body which was not obtainable in a pure state. Its amount could only be roughly estimated by precipitating the concentrated filtrate from the preceding substance with alcohol, and multiplying the nitrogen contained in the precipitate by 6.25. The amount of this proteose was from 0.2 to 0.4 per cent. of the seed. Both these substances are unquestionably derivatives of some other proteid in the seed, presumably the proteose first mentioned.

IV. *Gliadin*, soluble in dilute alcohol and forming about 4.25 per cent. of the seed. It has the following composition :

GLIADIN.		
Carbon.....	-----	52.72
Hydrogen	-----	6.86
Nitrogen	-----	17.66
Sulphur	-----	1.14
Oxygen	-----	21.62
		100.00

This is the proteid called gliadin by Taddei and plant-gelatin by Dumas and Cahours. Mixed with impurities or altered to a greater or less extent by the processes of separation, it has been described by Ritthausen under the names of gluten-fibrin, plant-gelatin, or gliadin, and mucedin, and by Martin has been termed insoluble phytalbumose. The mucin of Berzelius and of De Saussure were impure preparations consisting chiefly of this proteid. It is soluble in distilled water to opalescent solutions which are precipitated by adding a very little sodium chloride. It is completely insoluble in absolute alcohol, but slightly soluble in 90-per cent. alcohol, and very soluble in 70 to 80-per cent. alcohol and is precipitated from these solutions on adding either much

water or strong alcohol, especially in the presence of much salts. Soluble in very dilute acids and alkalies and precipitated from these solutions by neutralization, unchanged in properties and composition. This proteid is one on which the formation of gluten largely depends.

V. *Glutenin*, a proteid insoluble in water, saline solutions and dilute alcohol which forms the remainder of the proteids of the wheat-kernel, generally about 4. to 4.5 per cent. of the seed. This substance is soluble in dilute acids and alkalies and is precipitated from such solutions by neutralization. Dissolved in $\frac{2}{10}$ per cent. potash water, precipitated by neutralization and, after thorough extraction with alcohol and ether, again dissolved in potash water, the solution filtered *clear*, precipitated by neutralization and dried at 110° , it has the following composition :

GLUTENIN	
Carbon	52.34
Hydrogen	6.83
Nitrogen	17.49
Sulphur	1.08
Oxygen	22.26
	<hr/>
	100.00

Unless prepared as above described the impurities are not removed and the analyses are discordant. This proteid was first described by Taddei under the name of zymom. Liebig as well as Dumas and Cahours named it plant-fibrin. Ritthausen called it gluten-casein, Weyl and Bischoff considered it to be an albuminate form of a myosin-like globulin. Martin named it gluten-fibrin and likewise considered it to be an albuminate form of a myosin-like globulin.

VI. Wheat-gluten is composed of gliadin and glutenin. Both these proteids are necessary for its formation. The gliadin with water forms a sticky medium, which by the presence of salts is prevented from becoming wholly soluble. This medium binds together the particles of flour, rendering the dough and gluten tough and coherent. The glutenin imparts solidity to the gluten, evidently forming a nucleus to which the gliadin adheres and from which it is consequently not washed away by water. Gliadin and starch mixed in the proportion of 1 to 10 form a dough, but yield no gluten, the gliadin being washed away with the starch. The flour freed from gliadin gives no gluten, there being no bind-

ing material to hold the particles together, so that they may be brought into a coherent mass.

Soluble salts are also necessary in forming gluten, as in distilled water gliadin is readily soluble. In water containing salts it forms a very viscid semi-fluid mass, which has great power to bind together the particles of flour. The mineral constituents of the seeds are sufficient to accomplish this purpose, for gluten can be obtained by washing a dough with distilled water.

VII. No ferment action occurs in the formation of gluten, for its constituents are found in the flour having the same properties and composition as in the gluten, even under those conditions which would be supposed to completely remove antecedent proteids, or to prevent ferment action. All the phenomena which have been attributed to ferment action are explained by the properties of the proteids themselves, as they exist in the seed and in the gluten.

ANALYSES OF FEEDING STUFFS.

The following analyses of feeding stuffs have been made at this Station within the last two years:

COTTON SEED MEAL.

3110. Sampled from stock on sale in Middletown.

3148. Sampled and sent by T. J. Stroud.

3409. Made by Charlotte Oil & Fertilizer Co., Charlotte, N. C. Sent by H. S. Lathrop, Suffield.

3726. Sold by Thomas A. Shaw, Hartford. Sent by W. H. Olcott, South Manchester.

3408. "Cotton Seed Feed." Made by the Charlotte Oil & Fertilizer Co. "Claimed to be a complete food for cattle and sheep. Twenty-five pounds a day said to be sufficient for a cow or steer with no other food. Price one-half that of cotton seed meal." Sent by H. S. Lathrop, Suffield.

LINSEED MEAL.

3359. Made by Detroit Linseed Oil Works. Sent by T. A. Stanley, New Britain. Cost in 1891, \$24.00 per ton in car lots delivered in Connecticut.

3718. The same delivered in 1892. Cost \$24.90 per ton in car lots delivered.

3142. Marked "Pure Ground Oil Cake." Bought of Taylor & Richards, Westport. Sampled by E. C. Birge, Southport. Cost \$30.00 in 1891.

3143. The same, but marked "Linseed Meal." Cost \$30.00 in 1891.

3725. Bought of Thomas A. Shaw, Hartford. Sent by W. H. Olcott, South Manchester. Cost \$31.00 in January, 1893.

CREAM GLUTEN.

3363. Made by Chas. Pope Glucose Co., Geneva, Ill. Sold by Smith, Northam & Robinson, Hartford, September, 1891. Sent by T. J. Stroud, Shaker Station.

GLUTEN FEED AND GLUTEN MEAL.

3536. Gluten Meal. Bought in East Hartford. Sent by W. H. Olcott, South Manchester. Cost by single bag (100 pounds), \$1.40.

3716. Buffalo Gluten Feed. Sent by T. A. Stanley, New Britain. Cost \$23.50 per ton in car lots delivered in Connecticut.

3728. Buffalo Gluten Feed. Bought of Stephen Hurd for \$1.15 per 100 pounds. Sent by M. H. Wetmore, Winchester.

3736. Buffalo Gluten Feed. Made by American Glucose Co., Buffalo, N. Y. Sent by F. M. Bartholomew, East Wallingford. Cost \$1.15 per 100 pounds.

3727. Chicago Gluten Meal. Bought of N. Bennett, West Winsted, for \$1.25 per 100 pounds. Sent by M. H. Wetmore, Winchester. Messrs. C. M. Cox & Co., sales agents for Buffalo Gluten Feed claim that the three samples above noted do not fairly represent the quality of the article.

WHEAT FEEDS.

3717. Spring Bran, bought of James Lincoln, Berlin. Cost December, 1892, \$16.25 per ton in car lots, delivered. Sent by T. A. Stanley, New Britain.

3719. Acme Bran, bought by Noble Bennett, New Britain. Cost \$17.00 per ton in car lots, delivered. Sent by T. A. Stanley.

3720. Acme Bran, from Dakota. Bought of Levi Wells. Cost \$17.00 per ton in car lots, delivered. Sent by T. A. Stanley.

3729. Middlings, bought of N. Bennett, West Winsted, for \$1.15 per 100 pounds. Sent by M. Wetmore, Winchester.

3405. Fine White Wheat Middlings, used in feeding experiment at the Webb farm.

3737. Shorts, bought of Wilder & Puffer, Springfield, for \$16.35 per ton in car lots, delivered. Sent by T. J. Stroud, Shaker Station.

3706. "Mixed Feed," made by Acme Milling Co. and sold by J. M. Williams, Manchester, at \$21.00 per ton. Said to be the entire waste in the process of making fine flour. Sent by W. H. Olcott.

OAT FEED.

3124. Sent by B. F. Case, Canton Center. Cost \$30.00 per ton in March, 1891.

3724. Sold J. M. Williams, Manchester, for \$25.00 per ton in December, 1892. Sent by W. H. Olcott, South Manchester.

MISCELLANEOUS FEEDS.

3421. Western Corn Meal, sent by N. S. Baldwin, Meriden.

3420. "Corn and Cob Meal," ground by N. S. Baldwin, from Eastern grown corn.

3117. Hominy Feed. Sent by F. H. Stadtmueller, Elmwood.

3510. Kiln-dried Starch Feed, costing \$20.00, sent by E. A. Bradley, Centerville.

3147. Buffalo Kiln-dried Sugar Meal. Bought of American Glucose Co., Buffalo, N. Y., for use in feeding experiments.

3401. Malt Sprouts, bought of E. A. Talcott, Harwinton, for \$20.00 per ton, January, 1892, by Henry Von Tobel, Harwinton.

3464. Buckwheat Flour. Sent by Theron F. Griswold, Little Haddam.

With the analyses are given for comparison the average composition of most of the feeds named as determined from a considerable number of analyses formerly made at American Experiment stations.

The comparison of the composition of "Western Corn Meal" with corn and cob meal made from sound Connecticut-grown corn shows the latter to be much drier, and to contain half a per cent. less albuminoids, but half a per cent. more fat, six per cent. more fiber, and one and eight tenths per cent. less of starchy matter.

There is nothing in the chemical analysis to indicate a decided difference in feeding value between the two.

ANALYSES OF FEEDING STUFFS.

		Analysis.					Analysis, Calculated Water-Free.					
		Water.	Ash.	Protein.	Fiber.	Nitrogen-Free Extract, (Starch, Gum, etc.)	Fat.	Ash.	Protein.	Fiber.	Nitrogen-Free Extract, (Starch, Gum, etc.)	Fat.
Cotton Seed Meal,	-----from Middletown.	3110	8.23	7.62	44.50	4.38	25.77	9.50	48.5	4.8	28.1	10
	T. J. Stroud.	3148	9.43	7.52	41.12	6.07	29.93	5.93	8.3	6.7	33.1	6.5
	H. S. Lathrop.	3409	7.47	6.29	44.24	9.64	23.12	9.24	6.8	10.4	25.0	10.0
	T. A. Shaw.	3726			40.06							
Average Composition,												
Cotton Seed Feed, half hulls and half meal, Linseed Meal,	-----	3408	8.86	2.87	17.81	24.52	42.99	2.95	3.2	19.4	47.2	3.3
	T. A. Stanley.	3359	11.34	5.53	36.72			3.43	6.2	41.4		3.9
	T. A. Stanley.	3718	9.33	5.53	36.75	8.25	34.91	5.23	6.1	40.5	38.6	5.7
	E. C. Birge.	3142	10.92	5.54	35.69	7.50	33.05	7.30	6.1	8.4	37.2	8.2
	E. C. Birge.	3143	10.40	5.68	35.43	7.75	34.26	6.48	6.4	8.7	38.2	7
	W. H. Olcott.	3725			31.25							
	-----		9.20	5.70	32.90	8.90	35.40	7.90	6.3	36.2	9.7	8.6
Old Process, Average Composition.												
New Process, Average Composition.	-----	10.10	5.80	33.20	9.50	38.40	3.00	6.5	36.9	10.5	42.8	3.3
	T. J. Stroud.	3363	8.98	.75	38.19	1.34	34.99	15.75	.9	4.20	1.4	17.3
	W. H. Olcott.	3536			24.06							
	-----		8.93	.70	24.06	5.79	48.32	11.70	.8	26.5	6.4	53.5
Buffalo Gluten Meal,	T. A. Stanley.	3716	7.85	.79	21.65	7.62	51.84	10.25	.9	23.5	56.2	12.8
	M. H. Wetmore.	3728	7.79	.78	23.56	7.85	48.38	11.14	.9	25.6	53.0	12.0
	F. M. Bartholomew.	3736	7.15	1.07	25.90	5.24	48.98	11.66	1.2	27.9	56.5	12.6
	M. H. Wetmore.	3727	9.56	5.68	16.19	9.93	53.04	5.60	6.3	18.0	11.0	58.5
	T. A. Stanley.	3717	9.86	5.90	17.75	7.15	54.39	4.95	6.5	19.8	8.0	60.2
	Acme Bran,	3719	9.68	5.66	19.56	7.10	52.30	5.70	6.3	21.6	7.9	57.9
	Acme Bran.	3720										
Bran, Average Composition.												
Middlings.	-----	11.90	5.80	15.40	9.00	53.90	4.00	6.6	17.4	10.2	61.3	4.5
	M. H. Wetmore.	3729	9.44	4.40	18.57	6.22	56.12	5.25	4.9	20.5	6.9	58
	-----	3405	9.54		19.25	3.44				21.3	3.8	4.7
Fine Middlings, Station.												
Middlings, Average Composition,	-----	12.10	3.30	15.60	4.60	60.40	4.20					
	T. J. Stroud.	3737	10.77	6.06	16.94	9.44	51.50	5.29	6.8	19.0	10.6	57.7
	W. H. Olcott.	3706	12.55	5.27	17.25	7.10	53.15	4.68	5.9	19.8	8.1	60.8
Mixed Feed,												

ANALYSES OF FEEDING STUFFS—(Continued.)

	Analysis.					Analysis. Calculated Water-Free.						
	Water.	Ash.	Protein.	Fiber.	Nitrogen-Free Extract. (Starch, Gum, etc.)	Fat.	Ash.	Protein.	Fiber.	Nitrogen-Free Extract. (Starch, Gum, etc.)	Fat.	
Oat Feed,.....	3134	8.23	4.13	17.87	7.60	55.37	6.80	4.5	19.5	8.3	60.3	7.4
B. F. Case,.....	3724	6.68	3.94	16.86	8.18	56.66	7.68	4.2	18.0	8.8	60.7	8.3
W. H. Olcott,.....		7.70	3.70	16.00	6.10	59.40	7.10	4.0	17.3	6.6	64.4	7.7
Average Composition,.....												
Western Corn Meal,.....	3421	18.02	1.05	9.18	1.49	67.18	3.08	1.2	11.2	1.8	82.0	3.8
N. S. Baldwin,.....												
Average Composition,*.....		15.00	1.40	9.20	1.90	68.70	3.80	1.6	10.8	2.2	81.0	4.4
Corn and Cob Meal,.....	3420	13.65	1.45	8.56	7.42	65.34	3.58	1.7	9.9	8.6	75.7	4.1
N. S. Baldwin,.....												
Average Composition,.....		15.10	1.50	8.50	6.60	64.80	3.50	1.7	10.0	7.8	76.4	4.1
Hominy Feed,.....	3117	12.95	2.54	10.81	3.70	61.90	8.10	2.9	12.4	4.3	71.1	9.3
F. H. Stadtmueller,.....												
Average Composition,.....		11.10	2.50	9.80	3.80	64.50	8.30	2.8	11.0	4.3	72.6	9.3
Kiln-dried Starch Feed,.....	3510	9.24	.63	17.06	5.65	59.04	8.38	.7	18.8	6.2	65.1	9.2
E. A. Bradley,.....												
Buffalo Kiln-dried Sugar Meal,.....	3147	11.45	1.22	21.82	5.17	49.21	11.13	1.4	24.6	5.8	55.6	12.6
Station,.....												
Malt Sprouts,.....	3401	12.91	6.19	23.13	11.58	44.81	1.38	7.1	26.6	13.3	51.5	1.5
H. Von Tobel,.....												
Average Composition,.....		10.20	5.70	23.20	10.70	48.50	1.70	6.3	25.8	11.8	54.2	1.9
Buckwheat Flour,.....	3464	15.18	.92	5.63	.50	76.94	.83	1.1	6.6	.6	90.7	1.0
T. F. Griswold,.....												
Average Composition,.....		14.60	1.00	6.90	.30	75.80	1.40	1.2	8.0	.4	88.8	1.6

* 77 analyses of corn meal from all localities.

EXAMINATION OF THE SEED OF ORCHARD GRASS,

Dactylis glomerata.

This species is one of the best meadow grasses. It roots deeply and is less affected by drought than most other grasses, it grows better in the shade than timothy or red-top and is earlier in bloom, it is believed to be more permanent than timothy on land suited to it and gives large crops. If cut before full bloom the hay is nutritious and not coarser or more strawy than timothy.

But little orchard grass is grown in this State. Many who have tried it have either failed to get a good catch or have got a catch altogether too good of grasses other than orchard grass, notably of meadow fescue, *Festuca pratensis*, perennial rye grass, *Lolium perenne*,—perennial only in name—and chess or cheat, *Bromus secalinus*. This fescue is a good meadow grass, but rye-grass and chess are very inferior or worthless.

The failures made in sowing orchard grass and the consequent indifference to it are largely to be explained by the quality of seed which is offered in market. To learn the state of the trade, this Station has examined six samples of seed bought by farmers of seedsmen in this State and six samples purchased in Boston and five in New York. The results of the botanical analyses and germination tests are given in the following table. The per cents of different seeds found in the samples are by *weight* and not by number. No attempt was made to identify other seeds than those named in the table. Many seeds were immature and the duplicate sprouting tests did not in some cases agree closely, but that the conditions of the tests were suitable is shown by the fact that good mature seed sprouted freely in the testing apparatus. Four tests were made of each of the samples from A to G and two tests of each of the others. The highest result in each case is given in the table. The last column of the table is prepared by multiplying the per cent. of pure orchard grass seed by the per cent. of this pure seed that is capable of sprouting and dividing the product by 100.

The result of this examination may be summarized as follows:

1. Of the 17 samples of Orchard grass seed purchased in New York, Boston, and at various places in Connecticut, one sample contained as much as 98.8 per cent. of pure seed the remainder being chaff.

Another contained no orchard grass seed whatever, and consisted mainly of *Lolium perenne*, or perennial rye-grass.

Excluding this sample the other 16 samples contained on the average 77.4 per cent. of pure seed.

2. Seven out of sixteen samples contained notable quantities, from 8.3 to 35.5 per cent., of seed of perennial rye-grass, *Lolium perenne*, which is less valuable and sells at a lower price. "Tested" Orchard grass seed is quoted at 11 cents per pound and "tested" perennial rye grass at 4½ cents. A single sample contained 14.1 per cent. of a species of *Bromus*, probably *secalinus* or chess.

3. In one sample as high as 88 per cent. of the orchard grass seed sprouted, in another as low as 4.5 per cent. and on the average of 16 samples 50.0 per cent.

4. Taking the 16 samples together, the average quantity of pure orchard grass seed which was capable of sprouting was 40 per cent.; i. e. out of every 100 pounds bought, 40 pounds was pure, live seed. Probably the quantity that would produce healthy plants was less than this.

EXAMINATION OF ORCHARD GRASS SEED FROM THE CONNECTICUT, BOSTON, AND NEW YORK MARKETS.

Mark.	Botanical Analysis.					Sprouting Test.		
	Orchard Grass.	Meadow Fescue.	Perennial Rye.	Bromus.	Other Seed, Chaff and dirt.	1000 seeds weigh grams.	Per cent. sprouting.	Per cent. of pure seed in sample capable of sprouting.
A	58.6	----	20.5	----	20.9	.666	41.0	24.0
B	69.6	----	----	14.1	16.3	.571	27.5	19.1
C	76.1	2.5	8.3	----	13.1	.773	43.0	32.7
D	67.2	4.7	8.9	----	19.2	.537	32.5	21.8
F	94.7	----	----	----	5.3	.621	40.5	38.4
G	43.9	----	23.1	----	33.0	.535	36.0	15.8
I	92.9	----	----	----	7.1	.729	54.5	50.6
J	87.8	----	----	----	12.2	.495	42.5	37.3
K	60.3	----	----	----	29.7	.588	44.0	26.5
L	88.2	----	----	----	11.8	.838	79.0	69.7
M	none.	----	----	----	----	----	----	none.
N	65.7	----	31.4	----	2.0	.609	4.5	3.0
O	98.8	----	----	----	1.2	.902	35.0	34.6
P	92.0	----	----	----	8.0	.555	88.0	81.0
Q	97.7	----	----	----	2.3	.740	76.5	74.7
R	81.6	----	15.7	----	2.7	.745	77.0	62.8
S	62.7	----	35.5	----	1.8	.779	82.5	51.7

It is very likely that rye grass is sometimes added as a "make-weight," and it may easily escape detection in a casual examination, but it often grows with orchard grass, and when the two

kinds of seed are harvested together it is impossible by mechanical means to separate them.

Moreover, the trade seed of orchard grass even when pure is known to have a low germinating power both abroad and in this country, so that 30 to 35 pounds per acre of it make only moderate seeding.

The table of analyses shows however that it is still possible, if one will take pains enough and pay enough, to get quite clean seed of this grass of which over 60 per cent. will germinate.

A part of the trouble with the seed market is that while the best seed is naturally the most expensive, cheap seed is always the most popular.

The sample P represents seed for which there is absolutely no market in its pure state; it is too good for the trade and is mixed again for sale with inferior and less "expensive" seed.

It is obvious however that as compared with sample A, sample P is by far the more economical. In the first place a pound of P will produce more than three times as many plants of orchard grass as A. Again A will seed the land with some rye grass which is quite inferior to orchard grass. And lastly the catch of grass from the A seed will probably be poor, and very likely so poor that the land will have to be re-seeded. In this case it may lie idle for six months or a year and confirm the owner in the idea that orchard grass is not worth a trial.

To any one in the State desiring them, a few seeds each of Orchard grass, Perennial rye grass and Meadow Fescue will be sent by the Station to aid in their identification.

ASH ANALYSIS OF WHITE GLOBE ONIONS.

From several barrels of White Globe Onions grown at Green's Farms were selected twenty-two bulbs of fair size which weighed five pounds and one ounce.

After drying and pulverizing them, a weighed sample of the powdered material was burned with the usual precautions and the ash submitted to analysis with the following results:

Per cent. Composition of the Pure Ash.

[Station No. 3005.]

Potash.....	43.49
Soda.....	1.26
Lime.....	10.87
Magnesia.....	4.46
Oxide of iron.....	1.07
Phosphoric Acid.....	19.08
Sulphuric Acid.....	15.98
Chlorine.....	2.36
Sand and Silica.....	1.96
	<hr/>
	100.53
Deduct oxygen equivalent to chlorine.....	.53
	<hr/>
	100.00

The fresh onions contain .27 per cent. of nitrogen and .48 per cent. of pure ash.

From these data are calculated the quantities of these ingredients contained in one ton (2000 pounds), of onions as follows:

Nitrogen and Mineral Matter in One Ton of Onions (Bulbs).

Nitrogen.....	2.70 pounds.
Phosphoric Acid.....	.92 "
Potash.....	2.09 "
Soda.....	.06 "
Lime.....	.52 "
Magnesia.....	.21 "
Oxide of Iron.....	.05 "
Sulphuric Acid.....	.77 "
Chlorine.....	.11 "
Sand and Silica.....	.09 "

ANALYSES OF SOME AMERICAN CHEESES.

During the last few years a marked advance has been made in this country in the methods of cheese making, and there is scarcely one of the celebrated foreign cheeses that is not closely imitated in the United States. On page 157 are given analyses of eighteen samples of cheese, all of which, except the sample of Roquefort, are of American manufacture. The methods used for the analyses are essentially those described in the U. S. Dep't. Ag., Div. of Chem., Bull. 35, page 224. A description of the samples follow.

3754. Full cream cheese. Made by the Lebanon Cheese Co., Lebanon, Conn.

3755 and **3756.** Purchased in New Haven for 16 cents per pound. These represent fairly the kind of cheese most commonly sold in our market.

3757. Full cream cheese, old. Bought in New Haven.

3758-3761. Pineapple cheese from E. Norton, Goshen, Conn. The Goshen factory is the oldest in the United States, and the pineapple cheese has a wide reputation.

3762 and **3763.** Skim milk cheese. Bought in New Haven, 12 cents per pound.

3764. Neufchatel. Small cheeses wrapped in tin foil. Sell for 5 cents apiece.

3765. Fromage de Brie. Said to be made in Orange Co., N. Y.

3766. Imitation Old English cheese. 20 cents per pound. Bought in New Haven.

3767. Swiss ["Schweitzer"]. 20 cents per pound. Bought in New Haven.

3768. Cream cheese. Crown Brand. 25 cents apiece. Bought in New Haven.

3769. Limburger. Bought in New Haven.

3770. A cheese resembling pineapple in texture, made by J. Hohlridge, West Burlington, N. Y. Sample received from Hon. T. S. Gold, West Cornwall.

3771. Roquefort. Imported. 50 cents per pound. Bought in New Haven.

ANALYSES OF CHEESE.

Station No.		Water.	Ash, excluding Salt.	Salt.	Protein (N X 6%).	Fat.	Organic Acids and other matters by difference.	Volatile Fatty acids in 2.5 grams Fat.*
3754	Full cream (Lebanon).....	34.88	2.64	1.32	23.06	35.10	3.00	----
3755	" "	36.75	3.64		23.19	35.12	1.30	14.0
3756	" "	35.67	2.63	1.19	24.00	34.74	1.77	15.1
3757	Full cream, old	29.87	2.80	.99	28.31	35.62	2.41	----
3758	Pineapple, yellow, 4 months old	30.95	3.29	2.34	27.00	33.26	2.16	13.4
3759	" white, 8 "	28.01	2.96	2.14	27.12	37.25	2.52	14.6
3760	" yellow, 16 "	25.69	3.57	2.61	28.81	36.76	2.56	12.6
3761	" " 5 years old	11.62	4.02	1.86	34.45	45.20	2.75	13.8
3762	Skim milk.....	52.15	2.45	1.70	26.31	15.35	2.04	16.5
3763	"	53.08	3.09	1.22	26.81	13.80	2.00	14.7
3764	Neufchatel	57.25	1.06	1.42	15.03	22.30	2.94	13.4
3765	Fromage de Brie	60.20	1.13	.40	15.94	20.96	1.37	16.2
3766	Imitation Old English.....	20.74	3.68	1.47	30.12	42.72	1.27	15.8
3767	Swiss	33.79	3.22	1.85	26.12	33.25	1.77	----
3768	Cream, Crown Brand	31.40	.45	2.72	5.25	57.98	2.20	----
3769	Limburger	42.12	1.59	3.51	23.00	29.40	.38	14.6
3770	Cheese made by J. Hohlridge...	18.66	3.76	1.38	32.16	41.80	2.24	----
3771	Roquefort	39.28	1.53	5.27	22.62	29.53	1.77	9.1

* Volatile fatty acids were determined by Reichert's method in 2.5 grams of the ether extract. The figures represent cubic centimeters of $\frac{1}{10}$ normal potash solution required to neutralize the volatile acids. The small quantity of volatile fatty acids found in Roquefort is probably to be explained by the decomposition of fats during the peculiar ripening process.

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